MARCH 7, 1936

Railway Age

Founded in 1856

Published weekly by Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the Act of March 3, 1879.

Published every Saturday by the Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa., with editorial and executive offices: 30 Church Street, New York, N. Y., and 105 West Adams Street, Chicago, Ill.

Subscriptions, including 52 regular weekly issues, payable in advance and postage free; United States and possessions, and Canada, 1 year $6.00, 2 years $10.00; foreign countries, 1 year $8.00, 2 years $14.00.

Single copies, 25 cents each.

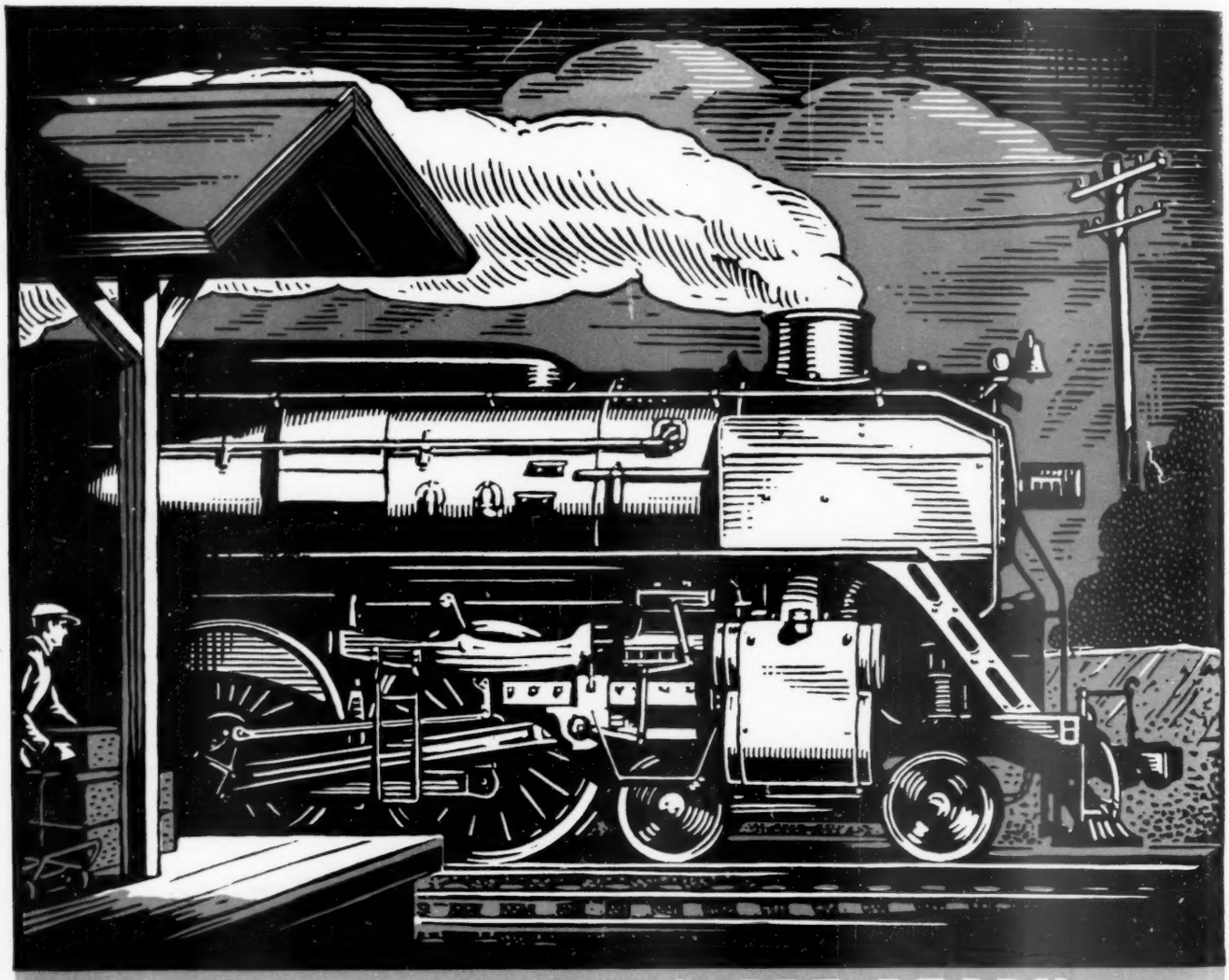
Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name registered U. S. Patent Office.

Vol. 100 March 7, 1936 No. 10

In This Issue

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service



NEW MATERIALS ARE READY for the "NEW" Railroading . . . . . .

The "new" railroading involves speed—and increased speed means increased stresses and higher maintenance. » » » To keep down the rising tide of maintenance Republic metallurgists have developed alloy steels and irons that not only meet the new conditions but actually reduce maintenance. » » » Agathon alloy staybolts will withstand the higher boiler pressures; special alloy sheets will reduce maintenance in large fireboxes. » » » The greater stresses in pins, rods and axles find Republic ready with special Agathon alloy steels for this service. Agathon Nickel Iron combines surface hardness for wear resistance with a tough shock-resisting core. » » » These are but a few of the many special railroad materials with which Republic is helping the railroads meet the new operating conditions. Send for booklet on alloy steels. Address Department RA. » » » » » » » » » »

REPUBLIC STEEL

Republic Steel CORPORATION

ALLOY STEEL DIVISION, MASSILLON, OHIO
GENERAL OFFICES: CLEVELAND, OHIO

RAILWAY AGE

Significance of the Increase in Railway Buying

The way in which natural economic forces operate to promote recovery from a depression when not prevented by artificial influences is strikingly illustrated by the increase in railroad buying from manufacturers which occurred in the first two months of 1936.

More steam locomotives were ordered for domestic service in the United States during January and February than were ordered during the entire year 1935; and the total of locomotives of all types (steam and Diesel-electric) purchased already this year is nearly three-fourths of last year's 12-months figure. Orders for freight cars, passenger-train cars, and rail are also strikingly, if somewhat less spectacularly, on the upgrade.

During the first two months of this year orders were placed with outside builders and in railroad shops for a total of 50 steam locomotives. This compares with a single order for one steam locomotive reported in the issues of *Railway Age* for the same period in 1935, and with a total of 28 steam locomotives ordered last year. In addition, 10 Diesel-electric locomotives (not including the power units for four streamlined trains) were ordered in January, thus bringing this year's total to date to 60, as compared with the 83 locomotives of all types ordered last year for domestic service. Also, there has been this year an export order for five steam locomotives, and there were outstanding at the end of February inquiries for 15 steam locomotives and announced plans for the acquisition of 10 more.

Large Increase in Equipment and Rail Orders

Turning to freight cars, reports for January and February reveal a total of 8,286 ordered during this year's first nine weeks. This compares with 830 ordered during the same period last year, and with 18,699 during the entire year 1935. Furthermore, a 1936 export order for 400 box cars has been placed; and, as was the case in the locomotive field, substantial domestic business for freight-car markets was in prospect at the end of February. Inquiries were outstanding for 1,300 cars and reports were current of plans for ordering 3,800 others.

Last year a total of only 63 passenger-train cars was ordered. Already in 1936 an order for 37 has been placed, and an inquiry has been issued for 50 more. Also, the four streamlined trains mentioned above have been ordered. Last year orders for three of these motor trains were placed.

The tonnage of rails ordered in 1936 is already 60 per cent as large as that ordered during the entire 12 months of 1935, and substantially more than twice as large as that placed during last year's first two months. A total of 298,300 tons has been ordered thus far this year, as compared with 495,300 tons in all of 1935, and 128,000 tons in the latter year's first nine weeks.

Thus have the 1936 markets for railway equipment and supplies got off to an auspicious start. And while disheartening experiences of recent years have made observers somewhat wary of attempting to "call the turn," it nevertheless appears that a substantial measure of optimism is now warranted. "Railway Buying Lifts Durable Goods Industries Out of Slump" was the significant caption of an article which appeared in a newspaper on March 2.

Increased Net Operating Income the Cause

The cause of the increase in railway buying from the manufacturing industry which is occurring is plain to those informed regarding railway affairs. It should be made clear to the public, and especially to politicians and those who can influence them. There has been need for more buying of railway equipment and other facilities throughout the depression. The cause of the actual increase now occurring is the increase in net operating income earned throughout the seven months August to February, inclusive, and which will continue

unless arrested by a recession of traffic, or by the adoption of more government policies increasing railway operating expenses.

The amount of buying done by the railways from the manufacturing industry is determined by the amount of net operating income they earn. In the five years 1931-1935, inclusive, net operating income was 59 per cent less than in the five years 1926-1930, inclusive, and the volume of railway buying from the manufacturing industry was 64 per cent less. During the first two-thirds of 1935 net operating income was less than in the first two-thirds of 1934, and in consequence buying declined. In the last one-third of 1935, net operating income was 46 per cent larger than in the last one-third of 1934; the increase in it is continuing; and it is in consequence of this, and this alone, that a relatively large increase of buying has begun. As a matter of fact, the increase of buying began in the latter part of 1935 almost simultaneously with the beginning of the increase in net operating income. More than one-half of all the freight cars ordered in 1935 were ordered in the last one-third of the year.

Government Policies, Railway Buying and Recovery

Railway buying from manufacturers declined from an annual average of $1,358,500,000 in the five years 1926-1930, inclusive, to an annual average of $491,300,000 in the five years 1931-1935, inclusive. A restoration of it to the 1926-1930 annual average would increase it by $867,000,000 annually, and afford employment to from 500,000 to 700,000 men in industries producing equipment and finished and raw materials, as well as to thousands of additional men on the railways themselves. That the railways need greatly to increase their buying is plain in view of the terrific retrenchments they have made throughout the last five years, and the decline in the number of their locomotives and cars and the deterioration of most of their facilities that have occurred.

Do the public, politicians and labor desire that a large increase in railway buying, with all the beneficial effects that it would cause, shall occur? They have not been acting as if they did during the last three years. Government policies have caused an increase during these years of about $300,000,000 annually in operating expenses, which has correspondingly curtailed the amount of net operating income earned and the amount of buying that could be and has been done. Legislation adopted during the last session of Congress attempts to increase operating expenses almost $100,000,000 annually more. Railway labor leaders are seeking further legislation for a 6-hour day at 8 hours pay, a limitation of the length of trains and the employment of more men in train crews, any part of which would further curtail railway net operating income and buying, and all of which would completely wipe out net operating income, bankrupt every railway in the country and stop all railway buying.

The increases in railway net operating income and buying that have occurred within recent months have occurred in spite of government policies affecting the railroads. If the public wants the railroads to continue to increase their buying, and thereby and in other ways to contribute all that they can to the continuance of economic recovery, it will have to prevent the adoption of more government policies of the same kind.

The Passenger Fare Decision

By a 5 to 4 decision, two commissioners not participating, the Interstate Commerce Commission has decreed a reduction in the maximum rate of fare for passenger service from 3.6 cents per mile to 3 cents a mile in "pullman" cars and 2 cents a mile in coaches. The decision will effect no change in rates in Western and Southern territory where rates as low or lower are already in effect. Its major result will be to lower the basic fares in Eastern territory which, while relatively small geographically, accounts for approximately one-half of the passenger-miles and 58 per cent of the passenger revenues earned by the American railroads.

In the proceeding, which was initiated by the Commission under its own motion, the Western and Southern carriers, with two or three exceptions, made no contention against the recommendations of Examiner Koch (*Railway Age*, July 20, 1935, page 83). In the Eastern district the Baltimore & Ohio favored a lower basis of fares, but the Pennsylvania, the New York Central and the New York, New Haven & Hartford defended the 3.6-cents rate. The Commission's finding, while directed to all the railroads, in essence simply negatives the fare policies of these three railroads; since the rest of the railroads either favored a fare reduction on some such basis as that ordered, or were neutral, or at least non-committal.

But these "three systems" happen to be carrying approximately one-third of all the passenger-miles (exclusive of commutation) and earning some 42 per cent of all passenger revenues received by the American railroads as a whole. The Commission in its decision asserts a claim to greater knowledge of what is good for the railroads in this service than the managements of the three railroads which have been most successful in developing and retaining this class of business. As Commissioner McManamy stated in his dissenting opinion: "I do not understand that the law gives us authority to assume managerial duties to the extent that is here proposed." Exactly. And unless we are mistaken, the courts, if given a chance to review the decision, will take the same view. We hope the railroad managements which have been ridden over roughshod will give the courts that opportunity.

There is a principle involved here which is far more important to the future of the railroads than what their passenger fare policy should be. No showing was made that the 3.6-cents rate was excessive or dis-

criminatory, nor could such a showing be made, because even that rate is not producing for these three roads a return to which they are entitled under the law. That being the case, the issue resolves itself into who, under the law, is charged with the duty of establishing policies designed to increase and conserve railway earnings. That function is purely managerial, and, if it is to be taken from management by the Commission, then what function is left to management? Railway management is hired by and is responsible to the stockholders for making just such decisions in the interest of the railroads. If their judgment is poor and their companies lose money thereby, then their employers—the stockholders—can replace them. But if the Commission takes over, as it is attempting to take over, this function—what protection have the stockholders against managerial folly when exercised by the Commission?

That is the issue in this case. The Commission does not and cannot base its decision on protecting the interests of the traveling public, but must rely solely on the unwarranted assumption that its judgment is better than that of railroad managers as to what is good for the earnings of the railroads. Even if the Commission's judgment should be the better in the present case, the acceptance of the principle by railroad managements would still be suicidal. The Commission itself admits that this is a test case. It says:

> We have said a number of times that the law does not contemplate the transfer to us of the duties of the general managers of the railroads. That the law does confer upon us the power to review some of the duties which ordinarily repose in railroad management is beyond question, for the making of rates is such a duty. Just where such duties which are reviewable by us end and those which are not so reviewable begin has never been clearly defined. . . .

Precisely. Just how far the Commission can go in taking over managerial functions *has not been* clearly defined, but this case if allowed to stand, will define it. Hardly a managerial prerogative will remain which could stand up against assault by the Commission if the finding in this case is allowed to stand and become a precedent.

If there is any principle of private enterprise worth fighting for it is that power and responsibility be not divorced. It would be better to accept managerial folly and reject bureaucratic wisdom rather than place the power of decision in the hands of those responsible to no one. If the Commission should fail to protect the public against corporate rapacity, it would be called by Congress to answer for that failure. But if it takes over deciding internal policies which are the proper concern only of railway owners, who is there to bring them to book if they bungle the job?

Legally and institutionally we believe the decision in this case is utterly unsound. Economically and statistically, we are not at all sure but that the Commission has made a more convincing case than the three railroads have which have opposed the reduction. After all, the managements of these three roads stand virtually alone among railroad men in the United States in defending the 3.6-cents fare basis. Furthermore, if private advices are correct, the official personnel even of these roads is not an undivided unit in opposing some reduction. The wide differential between coach and Pullman service provided in the new fare basis appears to us to be extremely short-sighted. (It is, for one thing, higher than the differential now obtaining on the Western and Southern roads upon the experience of which the Commission relied so largely in reaching its decision).

We believe that lower rates should be given a thorough trial in the East, which would happen without invasion by the Commission if the managements of some of the roads in that territory who believe they would be effective, would initiate such rates. There is, after all, no more reason why an individual management should be expected indefinitely out of deference to the contrary opinion of other railroads to postpone a move which it believes to be necessary for the protection of its stockholders, than there is for the managements of the "three systems" to sit quietly by while the Commission takes over their functions. Freedom of managerial initiative is necessary to the successful functioning of private enterprise and such freedom necessarily includes also the right to make mistakes. This freedom is the essence of private ownership; if it goes, private ownership might as well go too.

Railroads First Line of Defense Against State Socialism

There is a clear reason why all business should oppose three bills that have been introduced in Congress at the desire of the railroad unions.

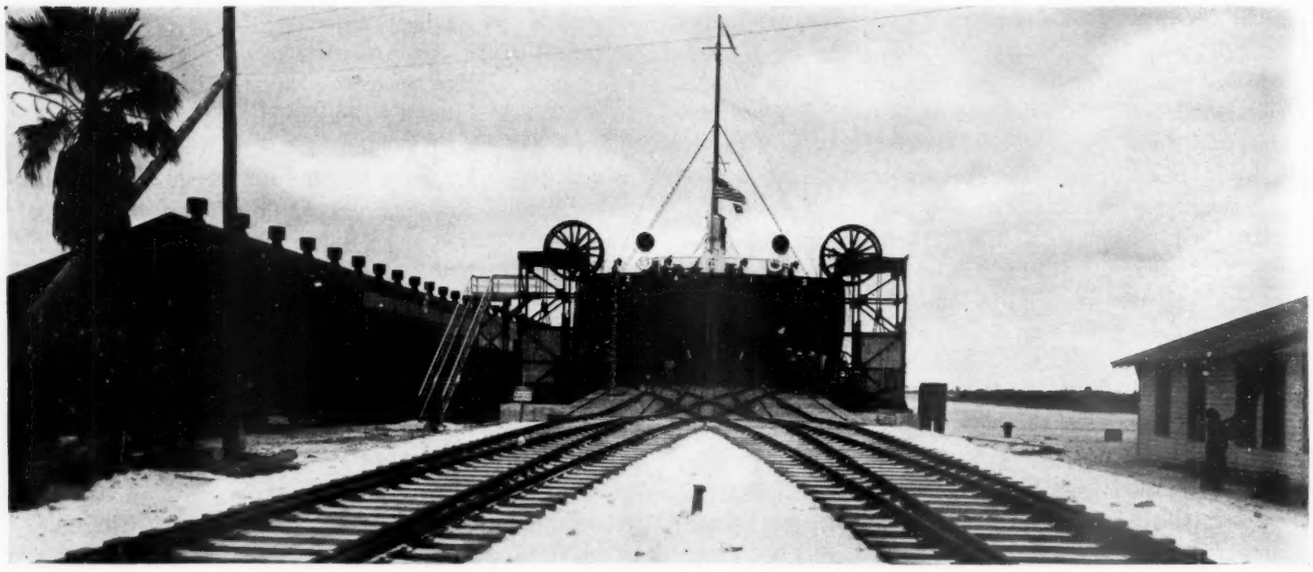
The bills would add several hundred million dollars annually to the cost of operating the railroads; in a normal year the additional cost would be a billion. It would consequently be harder than ever for the railroads to pay their way; and hence we should probably get government ownership. From this it would be a step to government owner ship of some other industries.

Thus the railroads constitute the first line of defense against state socialism. Everything practicable should be done to strengthen them. Legislation to increase their expenses should be opposed.

One of the pending bills will probably not pass, its very name being against it. This is the Six-Hour Day Bill. Most members of Congress, despite the pressure of organized labor, would hesitate to defend themselves in their constituencies after supporting a bill with such a title. The bill does not really reduce the working-day to six hours; it would pay a full day's pay for six hours' work, and everything above that would be overtime.

The second bill would limit the size of freight trains, so that more trains would be required, and therefore more men; and the third would force the railroads to add more men to the crews of certain trains. Since all three of these bills would vastly increase the expense of railroad operation and the likelihood of government ownership, they should be vigorously fought by a united business community.

—*From "Business Week."*



A Florida East Coast Car Ferry at the New Location at Port Everglades. The Huge Apron Used in Transfer from Rail to Boat Was Transferred from Key West by Sea.

The Florida Hurricane

Destruction wrought on the Florida East Coast—Changes in operation made necessary to maintain service

ON September 2, 1935, a tropical hurricane of unparalleled intensity struck the Key West extension of the Florida East Coast. This storm was unusual in that it struck practically without warning. It produced, at Long Key, the lowest barometer reading ever recorded. After it had spent its fury, damage estimated at $3,000,000 had been done to 40 miles of the railway between M. P. 430 on Key Largo and M. P. 470 on Key Vaca. Despite this disaster, the Florida East Coast officers were able, in a short time, to arrange revised operations so as to resume service on the same basis, so far as schedules are concerned, as before.

The 125-mile-an-hour gale destroyed every building in the affected area, except a few at the extreme edges of the storm. In Islamorada, in the worst of the storm, not a single stick remains of the station and section buildings. The wind produced a tidal wave that rose several feet over the tracks for the greater portion of this distance. When the water subsided, it was found that all the ballast in the track, amounting to approximately 250,000 cu. yd., had been swept away. Six miles of track had disappeared completely, 2 miles of which was later washed up on the mainland at Cape Sable, 20 miles away. Nineteen miles of track was washed entirely off the roadbed, and another 16 miles was washed from 1 to 10 ft. off center. The embankment in the affected area was damaged to varying degrees, being entirely washed away in a number of places. The average damage on the entire 40 miles is estimated to be about 40 per cent of the whole. The present situation may be described by stating that, in these 40 miles, wherever a natural water opening existed before the railway was built, a water opening exists now, as a result of the tidal wave.

The Key West extension of the Florida East Coast was known as "the ocean-going railway." It extends from Homestead, Fla., to Key West, a distance of 128 miles. The first 14 miles south of Homestead are located over the low lying marshes of the mainland. The remaining 114 miles follow generally the line of the Florida keys to Key West. These keys are usually long and narrow in shape, with intervening channels of shallow water. The land elevation on the keys is only a few feet above sea level. This fact required that the track be constructed at an elevation above the surrounding land to place it above the waves and tide. As a result, the roadbed on the keys, as well as where shallow water is crossed between the keys, consisted almost entirely of embankment, with bridges spanning the channels. The embankment over a great portion of the distance was exposed to the action of waves and tides.

In order to protect the embankment against the erosive action of the waves and tides, marine marl was secured

The Destruction of 40 Miles of Railway
(Pictures on opposite page)

(1) Characteristic Torsion of Track Subjected to Water Action.
(2) Heavy Cars Were Washed from the Track at Islamorada.
(3) Track Washed from Embankment at Tavannier.
(4) The Havoc at the North End of Long Key.
(5) Complete Destruction of Embankment at Snake Creek.
(6) Track Lined Back from Telegraph Poles.

(See Opposite Page for Captions)

(See Opposite Page for Captions)

by dredging from the banks or flats in nearby bays and deposited on the slopes of the embankment. This material, at first soft and plastic, dries and hardens quickly, and on account of its cohesive character was found to be the only material that would resist the action of the waves and tides with a minimum of damage. The embankments consisted of a center core of sand, rock and marl, with a marl slope protection.

In addition to the loss in right of way and buildings, there was a loss of approximately $500,000 in equipment, etc., made up as follows:

Estimated loss or damage to floating equipment	$80,000
Estimated damage to wire lines	10,000
Estimated damage to railway equipment	100,000
Estimated cost of recovering special train and other equipment at Islamorada and vicinity	25,000
Estimated loss of equipment at Indian Key and Long Key that cannot be recovered without restoring track	15,000
Estimated cost of per diem and recovering equipment at Key West and in Cuba of total value of $867,000 and expense of constructing temporary ferry terminal facilities at Port Everglades for restoration of interchange with Florida East Coast Car Ferry Company	200,000
Estimated damage to roadway and structures outside of 40-mile section, and contingencies	70,000

The lost train was a special relief train which was being sent from Miami to the United States Veterans camp on the keys. This train was started from Miami but was caught by the storm near Islamorada, and before it could return to the mainland it was struck by a tidal wave and all of it except the engine was washed from the track. Some of the cars were washed 300 to 400 ft. from the right of way. All the windows in the coaches were broken and the train was flooded with water. In addition, 1 locomotive, 6 passenger coaches, 2 baggage cars, 3 box cars, 1 flat car and 11 tank cars owned by the F. E. C., and 4 box cars and 1 tank car owned by other railroads were also marooned near Islamorada.

Additional Views of the Destruction

(Pictures on opposite page)

(7) Debris Covering Tracks at Islamorada.

(8) Remains of Original Trestle After Fill Was Washed Away.

(9) Track Distortion on Windleys Island.

(10) One of the Few Buildings that Remain.

(11) The Relief Train Was Washed 400 Feet from the Right of Way.

(12) A Section House, Pumper's House and Agent's House Once Stood on this Location.

The receivers of the Florida East Coast estimate the cost of restoring the Key West Extension as follows:

	Estimate A	Estimate B
Grading	$102,655.00	$102,655.00
Marl	394,400.00	394,400.00
Track	203,999.68	203,999.68
Ballast	106,750.00	106,750.00
Open Deck Trestles	446,700.00	.....
Girder Beam Spans	10,960.00	1,206,400.00
Draw Span	47,500.00	47,500.00
Temporary Trestles	.....	305,640.00
Steel Sheet Piling	100,000.00	100,000.00
Flashboard Fence	71,550.00	71,550.00
Camps and camping equipment	35,500.00	35,000.00
Engineering	50,000.00	80,000.00
Miscellaneous and contingencies	109,575.32	166,095.32
Total road-bed, bridges and track	$1,730,000.00	$2,870,000.00
Rebuilding and repairing building structures	60,000.00	60,000.00
Rebuilding and repairing wire lines	10,000.00	10,000.00
	$1,800,000.00	$2,940,000.00

Estimate A provides for restoration with open deck wooden trestles across openings, while Estimate B provides for restoration with steel girder beams on concrete piers.

The concrete bridge structures in the territory struck by the storm were undamaged; the item of additional bridge openings in the above table refers to necessary construction at some points where embankments between the keys have been washed out. In some places, where the tidal wave swept straight across the tracks, it carried the entire embankment with it. At other points, a whirlpool action was set up which destroyed only half the embankment. No decision has as yet been reached as to whether the line will be restored.

Violence Unprecedented

Storms of tornado velocity are frequent visitors to the Florida coast in the fall of the year, and F.E.C. forces, through long experience, have become adept at restoring normal service shortly after the storm subsides. As a rule, these storms are predicted a day or two in advance, and, when such warnings are received, relief outfits are made ready and each department involved is prepared for the emergency. The signal that the hurricane has struck the railway is always the same—the communication lines cease to function. This locates the storm area, and the relief outfits approach the northern and southern edges of the hurricane territory, but do not actually enter it.

As soon as the hurricane has blown itself out, the relief outfits enter the affected area and work toward each other, clearing the track of trees, telegraph poles and other obstructions, and repairing any small damage caused to the track or embankment. In this way, normal service is usually resumed in a few hours.

The Labor Day storm, however, was not predicted until a short time before it struck the railroad. Its unequalled intensity, coupled with the fact that the area affected, along the keys, was the railway's most vulnerable spot, caused the unusually heavy damage and complete severance of the line.

Operating Changes Necessary

The Florida East Coast normally handles a large amount of traffic to and from Cuba, which was transshipped from railway to car ferry and vice versa at Havana and Key West. After the storm had blown itself out, however, the Key West facilities were completely isolated, as a result of the destruction of the 40 miles of line north of Key West, and the Florida East Coast had become, to all intents and purposes, a local railway, with no through business. This presented a pressing and difficult problem to the operating and traffic officers, and they displayed considerable ingenuity in finding a solution quickly.

Passenger business to and from Cuba was formerly handled between Key West and Havana in connection with the P. & O. Steamship Company, which is jointly owned by the F. E. C. and the Atlantic Coast Line. Arrangements were speedily made whereby all through passenger trains would terminate in Miami, and close connections made there northbound and southbound with the P. & O. boats, which would operate between Havana and Miami instead of Key West. That part of the mainland south of Miami is now provided with mixed train service.

Key West itself is now servcied by P. & O. steamers operating between Tampa and Havana, which make a special stop in each direction at Key West. In addition, the Pan-American Airways, in which the F. E. C. has a small interest, are operating special plane service between Miami and Key West.

Freight Port Transferred

The problem of handling the freight was considerably more complex. However, by October 21, 1935, all ar-

(*Continued on page 396*)

Grade Separation on the Burlington near LaCrosse

How Wisconsin Spends Federal Funds

Procedure followed in the preparation of plans, the purchase of materials and the allocation of costs and responsibility in grade separation and highway crossing protection

By Harry D. Blake

Grade Crossing Engineer, State Highway Commission of Wisconsin, Madison, Wis.

FROM the time of its organization in 1912, one of the objectives of the State Highway Commission of Wisconsin has been the reduction of hazards to motorists at railway grade crossings. As a result, prior to 1935, its operations have included the relocation of many hundreds of miles of the 10,000-mile state trunk-highway system to divert through traffic from 335 grade crossings, and the construction of 160 grade-separation structures; in addition, 139 grade crossings have been closed. On the marked and numbered routes in Wisconsin, there are now approximately 870 railway-highway crossings, 618 at grade and 252 with grades separated.

A New Policy Evolved

In the beginning, the slogan of all responsible public officers was "Get Wisconsin out of the Mud"; consequently there was then little demand for the separation of railway and highway grades. In the period immediately following the World War, the mounting list of grade-crossing casualties and fatalities that accompanied the development of improved highways and the rapid increase in speed and volume of motor traffic focused attention on the hundreds of railway grade crossings on the main arteries for through highway traffic. Some progress had been made in developing grade-separation proposals, but the resistance of railway officers to financial participation had increased with the demand for construction. Interposition of complicated legal defenses, with many appeals from the orders of the Public Service Commission, made it difficult to get the proposed construction under way in a reasonable period of time.

In 1926, the Highway Commission called in the chief engineers of steam lines operating in Wisconsin and offered to assume a heavier share of the cost of grade separations, in return for elimination on the part of the carriers of legal obstructions to progress of the work. At the same time, the policy of working out the details of construction and of financing by agreement between the railways and public officers was emphasized, all with the approval of the Public Service Commission, which in Wisconsin has complete control of matters affecting public safety at railway crossings. As the individual projects were developed, the representatives of both the railways and the Highway Commission, presented requirements for the safe handling of their traffic and for the protection of their own interests. With concessions on both sides, the resulting agreements covered most of the essential requirements of each.

To expedite construction, the Highway Commission insisted that it must design and build the highway overhead bridges and the railway officers were equally insistent that they design and build the railway bridges, arguing that they must have full and complete control of both design and construction operations affecting the movement of trains and the safety of passengers. This policy, agreed upon at that time, has been continued and is still in effect in Wisconsin. There are many advantages to the state in the elimination of difficulties involved in the handling of railway traffic through constructon areas and in the elimination of possible claims for delay to revenue trains.

In the construction of railway-highway grade separations, the traditional procedure of the railway service was continued for many years, each new project adding to the experience of public officers charged with the re-

A Typical Crossing — Protection Installation

quirement for rapid execution of construction operations. Highway overhead bridges offered little difficulty, railway officers co-operating, as with the subways, to expedite the work. The development, by the Commission, of the plan of offering third-party protection for the railways in personal-injury actions through the medium of the contractor's public-liability policy, removed one of the outstanding difficulties. Contractors were required to secure approval from the railway engineers of falsework plans for the track span and of procedure involving the construction of this span and of its supporting bents. Concrete trestles were accepted as standard construction. Some protection for train movements through the construction area was offered by the railways as a part of the operating plan. Electrical circuits located on railway right of way were moved or protected with railway forces and the expense included as a part of the apportionable cost.

The general plan of procedure provided that expense made necessary to either party by the proposal to separate grades, subject always to approval as to fairness and reasonableness by the other party, was to be a part of the apportionable cost which was divided on a percentage basis where possible. Every effort was made to foresee the requirements of both the railway and the public, to include all of the probable cost in the estimate and to show the details as a part of the final approved plans that were attached to and made a part of each stipulation or agreement before submission to the Public Service Commission for approval. The result was that both parties entered into a contract to build a certain prescribed facility in accordance with prescribed procedure, the cost thereof to be divided in a prescribed manner with maintenance responsibility definitely defined. This arrangement is still in operation in Wisconsin and appears to be satisfactory to all of the parties involved, the percentage distribution of the cost now being in accordance with the federal regulations.

Approved Plans Are Part of Contract

The policy of including final approved plans of bridge, approaches and surfacing as a part of the contract between the railway and the Highway Commission may be unusual but is logical and necessary from every consideration of contract law. Approval must be extended by the Public Service Commission of the plan for the facility in its entirety. There is no appreciable delay with this procedure, for no work can be advertised until the bridge plans are completed and during the time necessary for the advertisement to run, the approach plans can be completed, the stipulation signed and considered by the Public Service Commission, and the order issued. With complete detailed plans as a part of the contract there can be no argument as to the specific responsibility of either of the parties in interest.

While the same general procedure has been followed with the railway overhead bridges, the construction technic has undergone a gradual evolution, hastened to some extent by the use of federal funds on grade-separation work. The installation of falsework with railway forces was never entirely satisfactory to public officers for several reasons, mostly administrative, and one of the first changes was to include this operation, all on a unit-price basis, as a part of the railway's contract for the construction of the railway bridge. In the same way, the removal of earth by the Commission's contractor from around the falsework piles had never been entirely satisfactory to railway officers, for occasionally piles were tipped from under the caps. It had also been found difficult to eliminate confusion with two or three groups operating in the same restricted area.

The first attempt to co-ordinate operations was to remove the major part of the highway excavation first, leaving the track on a standard fill across the opening. The grading contractor then withdrew until the railway contractor had finished the bridge. A railway receivership which occurred between the award of these two contracts helped to transfer responsibility for removing the earth in the bridge area to the railway-bridge contractor. This was better, but it was sometimes difficult to drain both sides of the track. At present railway officers are asked to contract for and complete the railway bridge before the highway contractor starts his operations. In this way there is some saving in falsework, as only enough dirt is removed at the center of the highway to permit the installation of stringers, and the cost of maintaining high falsework bents under heavy rail traffic is eliminated. There is, of course, some increase in the cost of foundation excavation. This procedure has been found to be very satisfactory and is used even though there is no railway fill. Where automatic pumps must be installed, the outfall ditch or pipe and the pump house and equipment are a part of the railway-bridge contract, the highway grading, draining and surfacing being performed by the Commission.

During the development of the subway project, the proposal form, the estimate, the specifications and the bridge plans, all interlocked by common paragraph numbers for the bid items, are drawn by the railway and are submitted to the Commission for approval. With federal projects, these exhibits are forwarded to the United States Bureau of Public Roads for consideration and

approval before the proposals are released. A public letting is held by the railway, the procedure being the same as will be described later for signals. The resulting contract is between the railway and the contractor. A representative of the Commission is available during construction to interpret the federal regulations, as necessary, and to assist in the preparation of plan-change orders and supplementary agreements. Labor is provided by the United States Re-employment Service and the railway bridge contractor's operations are all in accordance with the federal regulations controlling the Works Program of Grade Crossing Projects.

One of the outstanding projects in the Works Program under construction at present is that in the city of Kenosha, where the Chicago & North Western has awarded a contract for the elevation of about 3,000 ft. of its double track line between Chicago and Milwaukee, Wis. It is a standard track-elevation job, being carried out under traffic. Three street crossings are involved, as well as a large amount of gravity and crib retaining wall. The usual amount of track laying, track shifting and reconstruction are required and as on other track-elevation work of a similar character, the bridges will be built one-half at a time. The low bid which is the sum of a large number of unit-bid prices, was $335,736.50 and the only part of the undertaking to be performed with the railway company forces is the reconstruction of the block-signal system, estimated to cost about $3,000.

Another interesting project from the standpoint of design, is a highway overhead bridge to be located at the point where Rawson and Howell roads intersect the high-speed electric line of the Chicago, North Shore & Milwaukee. The highways cross at right angles and will so remain, the intersection being at the summit of the four-way bridge. Traffic-actuated highway signals will be installed. The contract for the bridge, to accommodate four railway tracks, has been let.

Allocation of Funds for Crossing Protection

The State Highway Commission set aside $100,000 from the United States Public Works Highway Grant (1935) for the purchase and installation of automatic signals at railway grade crossings. The money was allocated to the Class I roads as nearly as possible in the proportion that the miles of line of each road in the state bore to the total and, after the usual interchange of correspondence, representatives of the railways and of the Commission agreed upon individual crossings to be protected, each of which was designated as a separate project for 100-per cent federal participation, as contemplated by the regulations.

The Wisconsin statutes include no authorization for the disbursement of state funds for railway crossing protection, the responsibility for public safety at railway crossings being delegated to the Public Service Commission, and the highway department has no statutory entry except as a petitioner. On the other hand, the responsibility for the disbursement of funds in accordance with the federal regulations rests with the highway department. However, procedure was developed that was satisfactory to both.

The purchase of crossing signals with federal funds was complicated by an outstanding order of the Public Service Commission, permitting the installation of alternately flashing-light signals, only if equipped with a rotating "stop" sign that will take the restricted speed position in case of failure of power. It developed that equipment of that nature, while widely used by the railways operating in the state, was closely restricted in manufacture and included certain patented features. Several roads insisted on a specific manufactured product, arguing uniformity, standardization and utility. Representatives of the United States Bureau of Public Roads pointed out that there could be no closed specification on either signals or accessory material and that there must be a public letting with free competition. It was clear, therefore, that much of the manufactured accessory material would have to be purchased with an "or equivalent" clause at the end of each specification and that the decision as to the utility of the "equivalent" when presented for determination seemed to be a function of a railway's signal engineer rather than of the highway department. The specifications for the signals offered a still more difficult problem.

Responsibility of the Railways Recognized

The Wisconsin highway department has long been identified with the idea that the installation of railway facilities and equipment, the use of which involves the operation of trains and safety to passengers thereon, must be performed by the railways, under the direction of the highway officers as required by law for reimbursement with public funds. As the purchase, installation, operation and maintenance of railway crossing signals was believed to be normally a railway function, involving clearly the element of public safety and the liability of the carrier over a long period of years, the railways were asked to develop plans and specifications, to purchase signals and accessory material and to install the equipment with their own forces, all in accordance with the regulations of the Bureau of Public Roads covering disbursements of United States Public Works Highway Funds (1935).

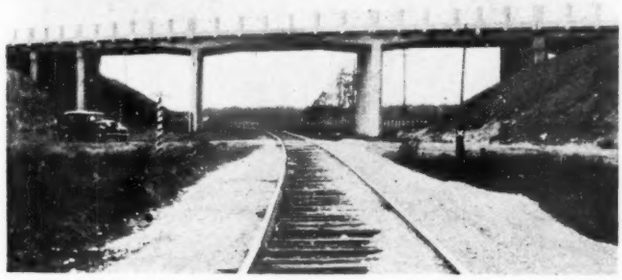
In the attempt to expedite a ruling from the Bureau on specifications for signals, the highway department asked the Public Service Commission to prepare a specification that would cover all types of alternately flashing-light signals approved by it for use at railway grade crossings. It was brought out that there were at least two types of signals manufactured by different companies, essentially the same in aspect but differing in internal mechanism. It developed that this difference in design was so great that the preparation of a composite specification amounted to a separate specification for each signal. Rather than attempt to write inclusive specifications for all of the parts of a crossing signal except the mechanism, the Public Service Commission presented two specifications, each covering a manufactured product in its entirety above the top of the concrete pier, identified as Paragraph 1 and Paragraph 2. They were both approved by the Bureau with the understanding that they would be presented as alternates, the bidder to quote on one or the other at his option and that the railway would accept the low bid regardless of type. With this background, the railways were asked to

A Simple Under Crossing on the North Western South of Green Bay

draw up and present exhibits as pre-requisites for a public letting, at which a lump sum bid would be asked for furnishing signals and accessory materials, f.o.b. a common railway storehouse in Wisconsin, for a complete installation at a given crossing, each such installation constituting a federal project. As prepared by the signal engineers of the eight railways involved, the file, when presented by the Highway Department to the Bureau, on each of 43 projects, consisted of exhibits to be described.

Preparation of Plans and Specifications

Complete plans on federal size linen were prepared in the same form as required for highway-construction projects. The first sheet or title page carried the usual sketch showing the location of the project with other identifying data. The second page was the "Estimate-of-Quantities" sheet. On this, descriptions and quantities of all material required for that complete installation or project were tabulated. This included both the material to be purchased at the letting as well as sand, stone, cement, nails, form lumber and minor items to be furnished for each project by the railway from its stores during the installation with company forces, the cost

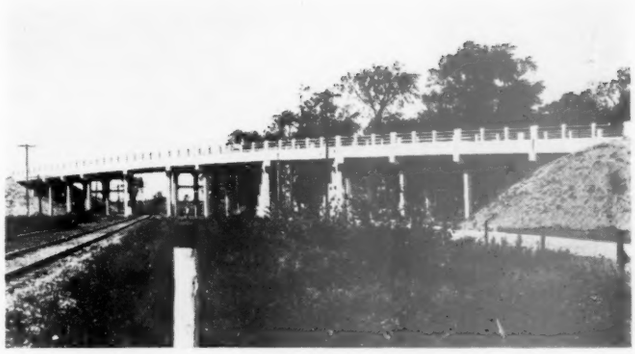


Typical Monolithic Type for Overhead Crossings

thereof to be billed against the state for reimbursement with federal funds. Each item on the Estimate-of-Quantity sheet carried a paragraph reference to the specifications. On the third page, the highway at and near the crossing was shown in both plan and profile. The remainder of this sheet, and as many additional sheets as were necessary, was filled with circuit diagrams and drawings of materials to be purchased.

Drawings of facilities to be supplied during construction with company forces, such as signal bases and the arrangement of insulated joints, were also included on these sheets to the extent necessary to show diagrammatically the scope of all operations to be financed with federal funds. As the tracings signed by the chief engineer of the railway were received by the highway department, they were checked against the other exhibits presented at the same time and, if satisfactory, they were signed by the state highway engineer, three of the prints being forwarded to the Public Service Commission for approval as required by law. If found satisfactory, an approved print was mailed direct to the railway, the second was retained by the commission for its files and the third was returned to the highway department. This cleared the plans for presentation to the Bureau of Public Roads.

The specifications for signals and accessory material,



This Grade Separation on the North Western also Included Two Trunk Highways

prepared by the railways, carried as paragraphs 1 and 2 the two signal specifications already described. The remainder consisted of detailed specifications for accessory material described by A. A. R. reference, if possible, or by the manufacturer's name and catalog number. All specifications of this latter type carried the "or equivalent" requirement. Each paragraph describing a specific item was numbered; this number being shown opposite that item in the estimate and the proposal and on the estimated quantity sheet. Requirements of the Bureau as presented through its regulations were, of course, incorporated in these specifications. Through co-operative effort the specifications on all of the roads took much the same form and the few minor changes required by the Bureau were common on all roads and were made by deleting or adding a few words or a paragraph.

The "Preliminary Agreement Estimates," as prepared by the railways, showed in tabular form the items of material required for the complete installation of the individual projects, with references to each paragraph of the specifications involved. The estimated cost of the individual items was not shown. Only one figure representing in total the estimated cost of all material required for each project was presented for the consideration of the Bureau. A second item showing the estimated cost of labor involved in the installation with company forces was also included. Ten per cent of the sum of labor and material was allowed for engineering and contingencies, the total of the three quantities representing the preliminary agreement estimate. In some cases, an amount for the rental of railway equipment was also included.

The proposal form was also prepared in the railway's office. The items of manufactured material required for the project were described with appropriate specification references, with spaces provided to show the required lump sum bid, both in figures and in writing, this total to include both signals and all accessory material as indicated specifically. A statement to the effect that the bidder was basing his bid on either Paragraph 1 or Paragraph 2 of the specifications was printed across the bottom of the proposal form, with the space for the paragraph number in blank to be filled in by the bidder, and with the further injunction that if the space was not filled in the bid would be declared irregular and not read. To simplify the award of the work, a schedule of all items in the proposal was repeated below and beyond the signature. The bidder was requested to show opposite each item the name of the manufacturer. Failure to show identification of material did not constitute an irregular bid, but work could not be awarded until it was filled out. This brought before the signal engineer of the railway at the time of the letting, a complete in-

ventory of all of the material the manufacturer planned to furnish.

Copies of the complete file for each project as it was to go to bidders, consisting of plans, specifications, preliminary agreement estimate and proposal, with a copy of the proposed letter to contractors inviting them to bid, were then presented by the highway department to the Bureau of Public Roads for its consideration and approval, with copies to the chief engineers and division engineers of the railways, the Highway Commission's division engineers and the Public Service Commission. A list of proposed bidders qualified by the railways in advance of the letting was also submitted to the Bureau with the file. With the approval of all of the exhibits, termed the P. S. & E.'s, and the financial release of all the projects on any one road by the Bureau, the chief engineer of that road will be authorized by the Highway Commission to mail his proposals with accompanying exhibits to contractors, all in exactly the same form as approved by the Bureau.

Contracts and Agreements Facilitated

Coincident with the development of the engineering and construction procedure, it was necessary to carry along the contractual relation with the carrier to permit the disbursement of public funds by the railway officers for the state. This was done through the medium of a written agreement or stipulation between the railway and the highway department for each project, in which the railway officers agreed to perform all of the operations incident to the purchase and installation of the signals in accordance with federal regulations and, when performed to the satisfaction of the Bureau, the Commission agreed to reimburse them with federal funds and nothing else. Included in this stipulation, were the specifications to be followed by the railway when installing the signals with its own forces, and attached to it were photostat copies of the approved plans for the project.

In view of the lump-sum-bid price on material, it was thought desirable in the interest of simplified accounting procedure to include in this stipulation a tabulation of items used in any or all of the installations on that road, with a unit price for each, at which the railway at the end of the field operations will buy from or sell to the Commission. It is thought that this will cover only minor items and make it possible to finish the work without another letting for material and with none left on hand. When signed by executive officers of both the highway department and the railways, these stipulations were filed with the Public Service Commission which held the statutory hearing and issued an order authorizing the installation of the signals.

The first letting was held at the office of C. T. Dike, vice-president and chief engineer of the Chicago & North Western, on December 19, 1935, the bids being opened by R. A. Sheets, signal engineer for that company. Representatives of the Commission and of the Bureau, as well as bidders and other interested parties were present. Bids were submitted on each of 13 projects by four companies, the low bids totaling $24,920.65. The chief engineer of the railway recommended that the award be made to the low bidder and this finding was concurred in by the highway department and the Bureau. The contract for the signals and accessory material is between the railway and the manufacturer. The work of installation with company forces will proceed at once. The supervision of all operations, by the railway officers and before the Public Service Commission, was by the writer for the State Highway Commission of Wisconsin, of which E. L. Roettiger is state highway engineer.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading for the week ended February 22, which included the Washington's birthday holiday, totaled 586,712 cars, a decrease of 44,635 cars as compared with the previous week, but an increase of 33,547 cars or 6.1 per cent over the corresponding week of 1935. All districts except the Northwestern reported increases as compared with last year; also, loadings were above last year in four of the eight commodity classifications—coal, coke, grain and grain products, and ore. The summary, as compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loading

For Week Ended Saturday, February 22

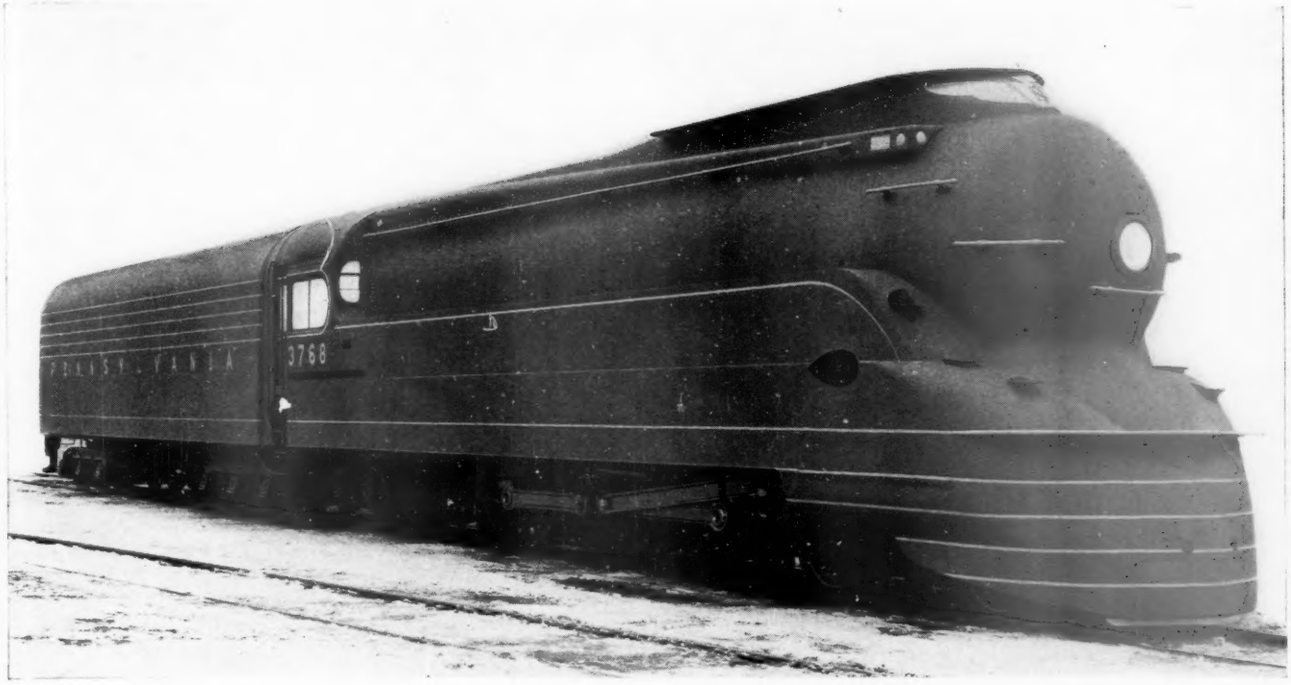
Districts	1936	1935	1934
Eastern	136,643	127,096	134,405
Allegheny	118,603	108,512	116,316
Pocahontas	49,411	44,881	45,095
Southern	90,541	87,510	89,531
Northwestern	60,174	62,962	62,791
Central Western	85,489	78,085	79,412
Southwestern	45,851	44,119	47,358
Total Western Districts	191,514	185,166	189,561
Total All Roads	586,712	553,165	574,908
Commodities			
Grain and Grain Products	27,144	26,109	27,460
Live Stock	10,117	11,238	15,292
Coal	175,669	127,025	156,270
Coke	10,148	7,252	10,068
Forest Products	24,393	25,854	22,592
Ore	6,046	4,016	3,181
Merchandise L.C.L.	131,805	142,018	144,205
Miscellaneous	201,390	209,653	195,840
February 22	586,712	553,165	574,908
February 15	631,347	581,669	600,268
February 8	622,097	591,327	573,898
February 1	621,839	596,961	565,401
January 25	584,691	555,528	563,100
Cumulative Total, 8 Weeks	4,815,106	4,492,268	4,497,556

Car Loading in Canada

Car loadings in Canada for the week ended February 22 increased to 43,566 from 43,256 cars for the previous week but were less than last year's total of 45,012 cars, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
February 22, 1936	43,566	22,187
February 15, 1936	43,256	22,727
February 8, 1936	41,564	22,335
February 23, 1935	45,012	23,769
Cumulative Totals for Canada:		
February 22, 1936	321,654	174,868
February 23, 1935	339,117	176,871
February 24, 1934	319,250	170,495

A PROFIT OF £494,521 after interest charges was reported by the Queensland (Australia) Government Railways for the year ended June 30, 1935. This compares with a 1933-34 profit of £160,118 and a 1932-33 figure of £57,654. Gross 1934-35 revenue was £949,298 in excess of that for 1933-34, while operating expenses rose only £592,223. Thus the increase of £353,075 in net operating revenues, of which £334,403 was carried through as an increase in net profit after allowing for additional interest charges of £18,672. These Queensland railways have been reporting net profits after interest charges since the year ended June 30, 1933, because of an adjustment in 1931 which resulted in a write-down of the capital account by £28,000,000, with relief from further responsibility for interest on that amount. In the first fiscal year after this adjustment, 1931-32, a slight deficit was reported but each of the three subsequent fiscal periods has brought a larger surplus than its predecessor.



The Pennsylvania Streamlined K4s Pacific Type Locomotive

Pennsylvania "Streamlines" a Steam Passenger Locomotive

A Class K4s cowling was designed after extensive wind-tunnel test—Provisions for smoke lifting are unique

THE first streamline steam locomotive on the Pennsylvania—No. 3768—has recently been turned out of the Altoona shops and was first introduced to the public this week. The locomotive is a Class K4s Pacific type, the exterior appearance of which has been completely altered by cowling over the front end and the boiler and by skirting which extends down from the running board and around the front of the locomotive. The exterior of the cab is blended into the boiler cowling and the cab windows are tied into the 18,000-gal. tender by striping to produce continuity and harmony of design of the engine and tender as a whole. Curved sides above the top of the tender tank conform to the sides of the cab roof. The top of the tender is not enclosed.

An outer diaphragm of heavy sheet rubber closes the space between the front of the tender and the rear of the cab, which is entered by side doors at the gangway behind the enginemen's seats. This diaphragm, which is put up under tension, provides a smooth, continuous surface between the engine and tender while standing on straight track, and stretches as much as is necessary to conform to the relative movement between the engine and tender on curves.

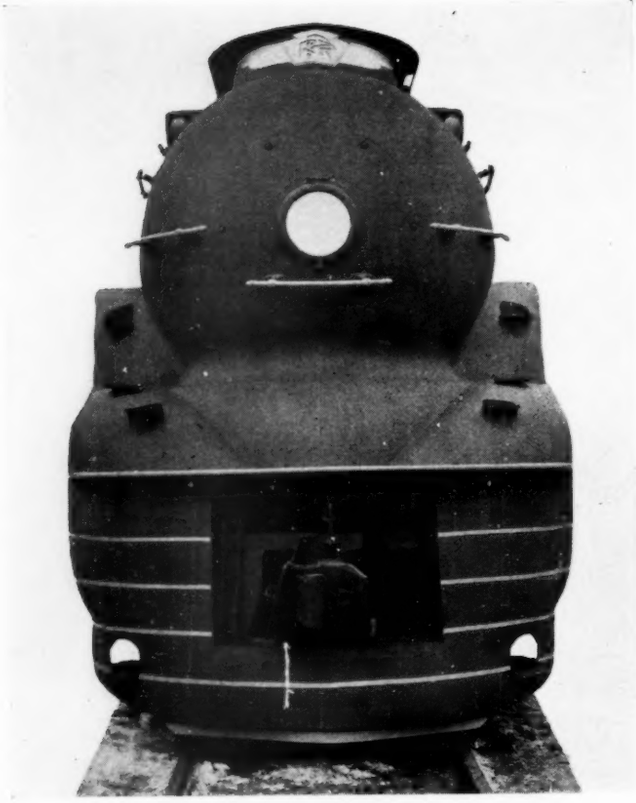
The body color is a gun metal tone against which the striping stands out sharply. The letters and stripes on the tender and around the cab windows are in gold. The stripes on the engine are stainless steel, as are also the handrails on the sides and front end and the winged keystone emblem of the railroad on the cowling in front of the stack.

The design of the streamlining was developed by the railroad's engineering department in co-operation with Raymond Loewy, New York, an authority on streamlining and a member of the road's technical advisory staff. In working out the final design tests were carried on over a period of months in the wind tunnel of the New York University aerodynamic laboratory. In all, models of 24 different designs were built and discarded in favor of four which were carried into the final stages of the wind-tunnel tests.

Instead of the usual type of wood or metal models, clay models were used for the first time in these experiments. They demonstrated their superiority over the other materials because of the readiness with which shapes could be altered immediately upon observing the results of each test. Observations of air flow were made by the use of both silk threads and smoke bombs, the records being obtained both by photographing and sketching as the tests were in progress.

The comparative wind-resistance tests were made with models of the locomotive, tender and one coach. Under these conditions at wind-tunnel speeds of 100 m.p.h. the air resistance was reduced from 896 hp. with a conventional locomotive to 600 hp. with the streamliner.

The streamlining ultimately adopted presents a num-



The Front Coupler Swung Forward into Operating Position

ber of interesting features, both as to general form and details. One of the striking features of the appearance of the locomotive is the retention of a distinctive steam locomotive characteristic by the separation between the front end of the boiler and the skirting in front of the pilot and around the cylinders. Aside from its pleasing appearance this separation is said to effect an improvement in the uniformity of pressure distribution in the air streams along the sides of the locomotive. To reduce the tendency to develop low-pressure pockets along the sides of the boiler at the front of the cab, which is characteristic of the so-called shovel-nose form, a further division of the air stream is effected by a horizontal plane projecting around the front end of the locomotive at approximately front deck-plate height.

The outstanding detail in the streamlining of the locomotive is the smoke-lifting device. This consists of the stack cowling, enclosing a space of considerable width at the sides of and behind the stack, which is closed at the top by a horizontal plane flush with the top of the stack and extending somewhat beyond the cowling at the front and sides. Along each side of the boiler, starting with the enclosure for the classification lights at the front, is a plane, the lateral elements of which are horizontal, which slopes upward toward the rear and blends into the contour of the cab roof. The space between each of these planes and the under side of the projecting horizontal plane is thus narrowed toward the rear, tending to produce a slight increase in air pressure and velocity at the rear end of the horizontal plane. This is said to remove all tendency for smoke to trail along the top of the boiler and the lateral component of the increase pressure in the air stream between the two planes is also a factor in reducing low-pressure spots along the side of the boiler toward the front of the cab. Something of the effectiveness of the device is indicated by the fact that the top of the boiler cowling back of the horizontal plane shows no evidence of smoke strain, the first evidence that smoke has "trailed" at any time being well back on the cab roof.

The front end of the locomotive is completely equipped with a coupler and both brake and signal hose connections. When not in use the coupler is swung back horizontally as shown in one of the photographs, and the hose connections are dropped into place behind the contour of the cowling which is closed by a panel rotating about fixed pivots and is permanently attached to the locomotive. Latches at the bottom hold it in the closed position.

The boiler cowling and cab are fabricated of sheet steel. The skirts below the running boards are of aluminum sheets. A long panel of each skirt is arranged to be completely removed by removing a few bolts when access to the rods and motion work is required in the enginehouse or shop. Doors have been provided at points where access for lubrication is not otherwise available. The smokebox and smokebox front have been lagged to protect the cowling from the heat.

Openings in the cowling are provided over the whistle and pops, the location of which has not been changed. The sand box, however, has been moved forward and is enclosed in the cowling immediately behind the stack under the horizontal smoke-lifting plane. The bell is mounted on the engine frame under the cowling at the front of the locomotive.

The water tank is provided with two longitudinal filling holes, one in each side. The panels in the curved extensions of the tender sides opposite these openings are arranged so they may be unlatched and rolled laterally toward the center of the tank to clear the filling holes.

The locomotive as altered has a weight in working order of 337,850 lb. and the weight of the tender loaded is 289,700 lb. The total length of engine and tender is 95 ft. Before the locomotive is assigned to regular passenger-train service it will be operated in test runs and exhibited at various points on the railroad.

Pilot Panel Turned Back to Expose the Coupler and the Signal and Brake Hose Connections

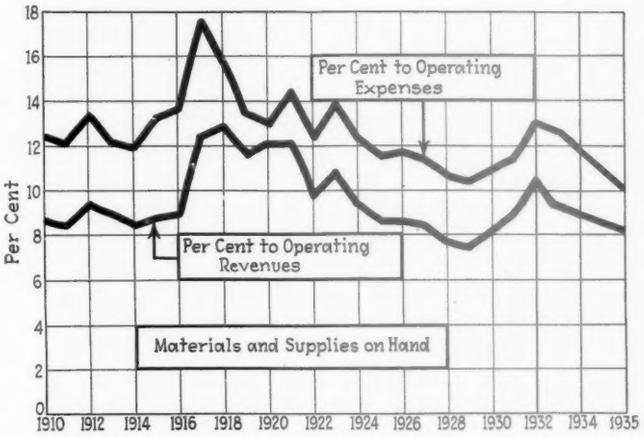
Railway Supply Inventories Down $11,000,000

Improvement in business finds material reserves on January 1 less than any year since 1916

SUBJECT to slight revisions when complete figures are received from all railroads, the Class I, Class II and Class III railroads of the United States are estimated to have begun the year 1936 with unapplied materials and supplies in stock amounting to approximately $291,750,000. This is $10,596,000, or approximately 3 per cent, less than the book value of supplies on hand January 1 ,1935, and is the smallest investment in unapplied materials which has been reported by the carriers in 19 years. Not only is the aggregate book value the lowest since 1916, but the investment, amounting to 10.9 per cent of operating expenses and 8.2 per cent of operating revenues, represents the smallest stock per dollar of expenses in any year since 1911, with the exception of 1928, and the smallest stock per dollar of revenue earned since 1911, with the exception of 1930. On January 1, 1921, railway inventories at the then prevailing prices amounted to $767,267,000.

Table I—Materials and Supplies on Hand—United States Railroads

	Amount	Reduction	Per cent of op. rev.	Per cent of op. exp.
June 30, 1911	$244,932,000		8.6	12.4
June 30, 1912	246,790,000	+ $1,858,000	8.5	12.1
June 30, 1913	300,601,000	+ 53,811,000	9.4	13.4
June 30, 1914	278,940,000	21,661,000	8.9	12.2
June 30, 1915	248,888,000	30,052,000	8.4	11.9
Dec. 31, 1916	333,361,000	+ 84,473,000	9.0	13.7
Dec. 31, 1917	514,051,000	+ 180,690,000	12.5	17.6
Dec. 31, 1918	641,759,000	+ 127,708,000	12.9	15.8
Dec. 31, 1919	608,527,000	33,232,000	11.6	13.5
Dec. 31, 1920	767,267,000	+ 158,740,000	12.1	12.9
Dec. 31, 1921	676,125,000	91,142,000	12.0	14.4
Dec. 31, 1922	556,260,000	119,865,000	9.7	12.3
Dec. 31, 1923	693,078,000	+ 136,818,000	10.8	13.9
Dec. 31, 1924	569,690,000	123,388,000	9.4	12.3
Dec. 31, 1925	535,126,000	34,564,000	8.6	11.5
Dec. 31, 1926	561,007,000	+ 25,881,000	8.6	11.8
Dec. 31, 1927	532,063,000	28,944,000	8.5	11.4
Dec. 31, 1928	478,625,000	53,438,000	7.7	10.6
Dec. 31, 1929	477,051,000	1,574,000	7.5	10.4
Dec. 31, 1930	437,375,000	39,676,000	8.2	11.0
Dec. 31, 1931	379,992,000	57,383,000	8.9	11.5
Dec. 31, 1932	321,595,000	58,397,000	10.8	13.1
Dec. 31, 1933	296,069,000	25,526,000	9.3	12.9
Dec. 31, 1934	302,346,000	+ 6,277,000	9.1	12.2
Dec. 31, 1935	291,750,000	10,596,000	8.2	10.9



Relation of Annual Inventories of All Railroads at the End of Each Year to the Aggregate Operating Expenses and Operating Revenues During Each Year

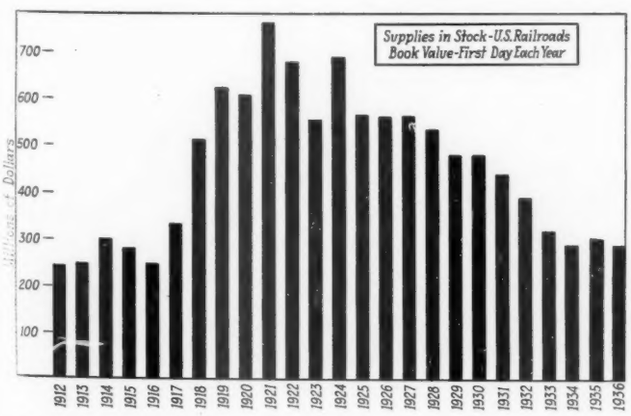


Chart Showing Total Book Value of Materials and Supplies on Hand on All Railroads on the First of Each Year

The ratio of the inventory on January 1, 1936, to the consumption of materials during the previous twelve months is a determination which must await more complete figures than are now available. It is improbable, however, that railroads have ever before entered a period of improved business comparable to that now under way with so small a volume of serviceable materials, measured either in dollars or in relation to work performed.

Following the practice of presenting each year a comprehensive analysis of inventories, the *Railway Age* will publish in a later issue statistics showing the more important subdivisions of the last annual inventories of each railroad, and the average rate of turnover. Such inventories as are subjected to analysis here represent the total materials and supplies reported in the annual statements of the Class I carriers and switching companies filed with the Interstate Commerce Commission. To facilitate comparisons, they have been grouped for the first time on a regional basis. No attempt is made to consolidate inventories of the separate reporting companies, although it is recognized that the stocks of some companies are controlled by the one management and in some instances are physically combined or interchangeable.

Reductions General

The capital tied up in materials and supplies on January 1, 1936, was smaller on 92 railroads and larger on 49 railroads than at the beginning of 1935. There was a reduction of $1,302,000, or 8.5 per cent, in the New England region; $4,698,000, or 9.5 per cent, in the Great Lakes region; $993,000, or 2 per cent, in the Central Eastern region; $3,047,000, or 8 per cent, in the Southern region; $1,018,000, or 2.5 per cent, in the

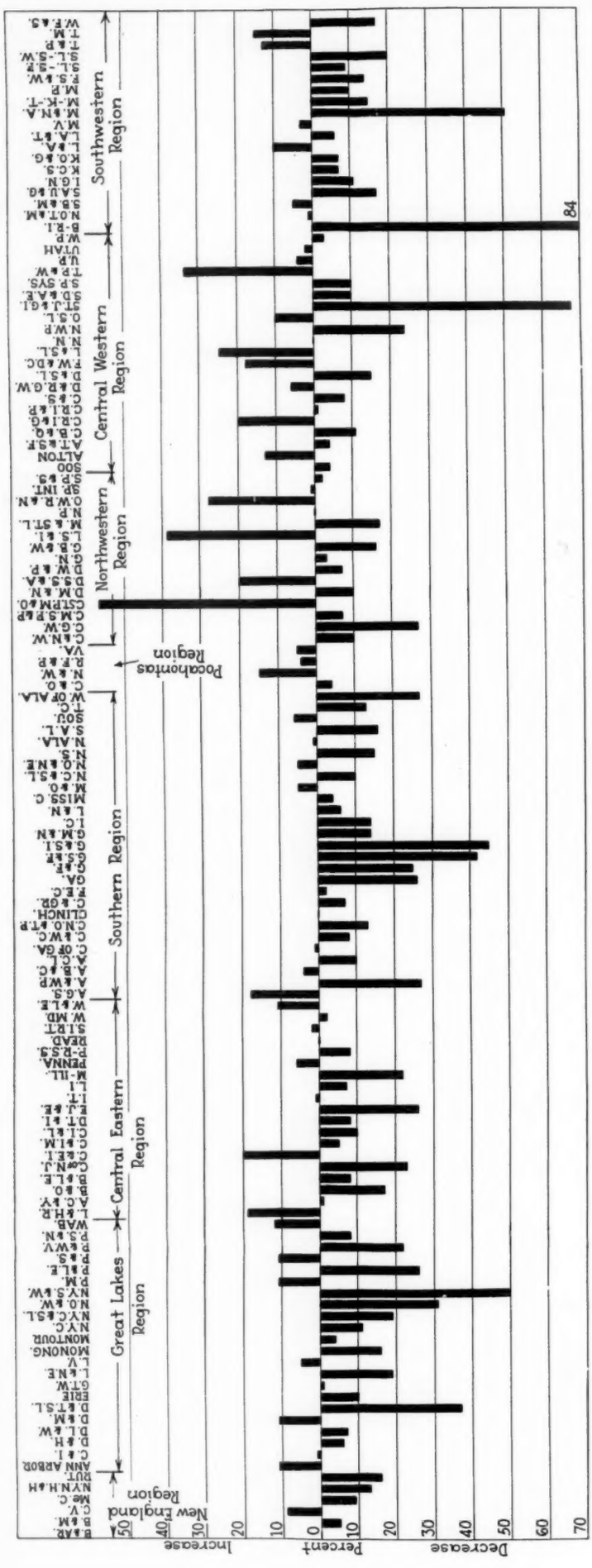


Chart Showing Per Cent Increase or Decrease of Annual Inventories for 1935 Compared to those of 1934

Northwestern region; $2,168,000, or 3 per cent, in the Central Western region; and $2,241,000, or 9.2 per cent, in the Southwestern region; and an increase of $713,000, or 6.5 per cent, in the Pocahontas region.

The book value of materials and supplies on hand, including fuel, rail, ties, miscellaneous materials, and scrap was reduced $3,279,000, or 11.5 per cent, on the New York Central; $1,511,000, or 16.4 per cent, on the B. & O.; $1,076,000, or 13.5 per cent on the I. C.; $1,608,000, or 9.5 per cent, on the S. P. system; and $187,900, or 11 per cent, on the I.-G.N. The largest increases were $1,355,000, or 5.5 per cent, on the Pennsylvania; $173,000, or 11.5 per cent, on the Pere Marquette; $206,000, or 12 per cent, on the Wabash; $125,000, or 20 per cent, on the C. & E. I.; $128,000, or 11 per cent on the W. & L. E.; $268,000, or 6 per cent, on the Southern; $404,000, or 57 per cent, on the C. St. P. M. & O.; $466,000, or 28 per cent, on the O. W. R. R. & N.; $247,000, or 25 per cent, on the L. S. & S. L.; $384,000, or 4 per cent, on the Union Pacific; $372,000, or 13 per cent, on the Texas & Pacific; and $778,000, or 15 per cent, on the Norfolk & Western.

The book value of inventories was equivalent to $2,010 per mile of line operated in the New England region; $1,670 per mile of line operated in the Great Lakes region; $1,890 per mile of line operated in the Central Eastern region; $895 per mile of line operated in the Southern region; $860 per mile of line operated in the Northwestern region; $1,140 per mile of line operated in the Central Western region; $880 per mile of line operated in the Southwestern region; and $2,000 per mile of line operated in the Pocahontas region; while the total of all railroads represented $1,200 per mile of line operated in the United States.

Total inventories were equivalent to 11 per cent of the annual operating revenues in the New England region; 12.7 per cent in the Great Lakes region; 9.2 per cent in the Central Eastern region; 10.1 per cent in the Southern region; 11.8 per cent in the Northwestern region; 13.8 per cent in the Central Western region; 12.7 per cent in the Southwestern region; and 10.1 per cent in the Pocahontas region.

The ratio of total inventories to annual operating expenses was 5.2 per cent on the D. L. & W.; 6.3 per cent on the Erie; 4.8 per cent on the N. Y. C. & St. L.; 6.1 per cent on the Wabash; 5 per cent on the B. & O.; 7 per cent on the C. R. R. of N. J. and the C. & E. I.; 8.9 per cent on the A. C. L.; 8.8 per cent on the Central of Georgia and on the Norfolk Southern; 7.2 per cent on the Southern; 3.6 per cent on the C. G. W.; and 7.9 per cent on the M. & St. L.; while the corresponding ratios were 11.1 per cent on the N. Y. C.; 9.4 per cent on the Pennsylvania; 8.3 per cent on the Illinois Central; 11.1 per cent on the C. & N. W.; 11.1 per cent on the C. M. St. P. & P.; 13.7 per cent on the Great Northern; 15.4 per cent on the A. T. & S. F.; 12.1 per cent on the C. B. & Q.; 13.1 on the Southern Pacific; 19.6 per cent on the Union Pacific; and 10.8 per cent on the Missouri Pacific.

Table II—Materials and Supplies in Stock, January 1, 1936

	Miles operated	Operating expenses	On hand, 1935	Decrease	Per cent decrease	On hand per mile, 1935	Per cent of op. exp., 1935
Bangor & Aroostook	603	$3,969,370	$827,217	$32	0	$1,370	20.8
Boston & Maine	2,015	32,549,275	4,779,104	273,806	5.2	2,380	14.7
Central Vermont	455	4,779,716	520,729	+42,183	+9.0	1,140	10.9
Maine Central	1,052	8,406,899	1,176,115	108,573	8.5	1,120	14.0
N. Y., N. H. & H.	2,070	52,414,423	5,757,894	900,747	13.5	2,780	11.0
Rutland	407	3,127,879	325,193	61,323	15.8	800	10.4
New England Region	6,602	$105,247,562	$13,386,252	$1,302,298	8.5	$2,010	11.0
Ann Arbor	293	$3,060,302	$266,139	+$28,561	+11.2	$910	8.7
Cambria & Indiana	37	909,419	47,596	+771	+1.0	745	3.0
Delaware & Hudson	835	20,512,281	2,206,264	149,285	6.0	2,620	10.7
Del., Lack. & Western	992	36,968,499	1,915,910	145,265	7.2	1,920	5.2
Detroit & Mackinac	242	548,623	181,227	+20,579	+11.3	750	33.0
Detroit & Toledo Shore Line	50	1,591,027	73,895	45,093	37.8	1,470	4.6
Erie	2,303	54,793,414	3,485,554	387,295	10.3	1,500	6.3
Grand Trunk Western	1,006	16,626,647	1,552,847	+62,012	+0.4	1,550	9.4
Lehigh & New England	220	2,593,600	339,635	79,247	19.0	1,540	13.0
Lehigh Valley	1,348	31,967,410	2,695,281	+128,526	+5.6	2,000	8.5
Monongahela	174	1,544,612	207,618	39,130	16.0	1,190	13.4
Montour	57	1,166,448	147,343	5,807	3.7	2,580	12.5
New Jersey & New York	46	925,332	5,745	+2,711	+89.0	1,250	6.2
New York Central	11,330	237,197,731	24,504,103	3,279,096	11.5	2,160	11.1
N. Y. C. & St. L.	1,692	23,107,185	1,112,039	258,858	18.8	655	4.8
N. Y., O. & W.	567	6,389,754	713,123	324,467	31.2	1,250	11.1
N. Y., Susque. & West.	217	2,528,254	34,670	37,162	51.8	1,600	13.7
Pere Marquette	2,127	21,137,287	1,352,819	+173,495	+11.5	640	6.4
Pitts. & Lake Erie	233	13,658,184	1,550,803	542,798	26.0	665	11.3
Pitts. & Shawmut	101	550,836	103,583	+10,865	+11.0	1,020	18.7
Pitts. & W. Va.	138	2,404,279	154,563	44,121	22.0	1,110	7.6
Pitts., Shawmut & Nor.	190	830,695	98,347	7,822	7.5	520	11.9
Wabash	2,447	31,246,552	1,917,241	+206,118	+12.0	780	6.1
Lehigh & Hudson River	96	1,013,308	78,208	+12,375	+18.7	810	7.7
Great Lakes Region	26,741	$512,907,679	$44,744,553	$4,698,423	9.5	$1,670	12.7
Akron, Canton & Youngstown	171	$1,334,947	$92,841	$182	0.5	$540	7.0
Baltimore & Ohio	6,440	105,464,140	7,605,614	1,511,073	16.4	1,180	5.0
Bessemer & Lake Erie	225	6,501,024	589,658	48,548	7.8	2,620	9.0
Central of New Jersey	684	21,462,672	1,502,208	453,678	23.0	2,200	7.0
C. & E. I.	931	10,627,133	741,131	+125,453	+20.0	800	7.0
C. & I. M.	131	2,323,275	263,653	13,265	5.0	2,000	11.3
C. I. & L.	646	6,629,031	632,675	64,357	9.5	970	9.7
D. T. & I.	472	3,638,762	439,647	36,936	7.5	930	12.1
E. J. & E.	440	10,123,781	730,922	254,304	25.8	1,660	7.2
Illinois Terminal	524	3,565,711	317,210	+2,294	+0.5	600	8.9
Long Island	396	18,431,359	819,986	58,043	6.5	2,060	44.5
Missouri-Illinois	208	846,280	99,034	27,898	22.0	476	11.7
Pennsylvania	10,473	263,100,184	25,731,623	+1,355,832	+5.5	2,460	9.4
Penna.-Read. S. S. Lines	413	5,459,968	150,227	12,648	7.5	363	2.7
Reading	1,459	35,752,145	5,098,547	+15,614	0	3,490	14.2
Staten Is. Rapid Transit	23	1,569,531	116,630	+2,210	+2.0	5,060	7.4
Western Maryland	883	10,205,419	1,394,623	21,859	1.5	1,580	13.7
Wheeling & Lake Erie	511	9,901,688	1,064,119	+128,238	+11.0	2,080	10.7
Central Eastern Region	25,030	$516,937,050	$47,290,248	$993,250	2.0	$1,890	9.2
Alabama Great Southern	315	$4,326,836	$300,329	+$44,469	+18.0	$954	6.9
Atlanta & West Point	93	1,393,035	213,954	77,018	26.5	2,300	15.3
A. B. & C.	639	2,799,968	309,453	+11,502	+4.0	585	11.0
Atlantic Coast Line	5,147	32,063,675	2,864,256	340,063	10.0	558	8.9
Central of Georgia	1,926	12,224,590	1,0474,375	+10,226	+1.0	558	8.8
Charleston & Western Carolina	342	1,436,506	209,147	18,630	7.8	612	14.6
C. N. O. & T. P.	336	8,711,856	658,240	98,820	13.0	1,960	7.6
Clinchfield	309	3,087,168	569,811	+743	0	1,710	17.1
Columbus & Greenville	167	897,050	115,825	7,725	6.5	693	12.9
Florida East Coast	779	6,694,208	1,422,396	35,827	2.1	1,830	21.3
Georgia	329	2,752,809	328,850	112,294	25.5	1,000	11.9
Georgia & Florida	408	1,000,364	132,399	43,649	25.0	324	13.2
Georgia, Sou. & Florida	397	1,685,095	107,941	78,236	42.0	272	6.4
Gulf & Ship Island	259	1,092,286	21,461	16,827	43.8	83	2.0
Gulf, Mobile & Northern	936	4,089,420	369,600	59,860	14.0	394	9.1
Illinois Central & Y. & M. V.	6,615	81,853,579	6,818,385	1,076,295	13.5	1,030	8.3
Louisville & Nashville	5,044	57,795,870	8,354,857	511,745	5.5	1,660	15.8
Mississippi Central	150	638,468	59,316	2,097	3.5	396	9.3
Mobile & Ohio	1,201	7,730,359	751,531	+34,386	+4.5	625	9.7
N. C. & St. L.	1,173	11,120,990	1,372,195	148,721	10.0	1,170	12.3
N. O. & Northeastern	204	1,718,889	190,804	+8,030	+4.5	935	10.7
Norfolk Southern	920	3,770,310	326,261	56,608	15.0	355	8.8
Northern Alabama	99	367,932	86,684	+890	+1.0	865	22.8
Seaboard Air Line	4,307	29,394,024	3,291,243	638,498	16.0	765	11.2
Southern	6,644	60,948,976	4,379,853	+268,859	+6.0	680	7.2
Tennessee Central	286	1,625,277	177,786	25,525	13.0	622	10.9
Western Ry. of Alabama	133	1,371,332	211,756	77,578	27.0	1,584	15.3
Southern Region	38,843	$342,542,872	$34,718,708	$3,046,912	8.0	$895	10.1
C. & N. W.	8,421	$65,348,579	$7,221,078	$780,754	10.0	$858	11.1
C. G. W.	1,512	11,591,088	416,697	155,468	27.0	275	3.6
C. M. St. P. & P.	11,129	76,416,517	8,463,762	652,598	7.0	760	11.1
C. St. P. M. & O.	1,652	13,281,705	1,104,795	+404,385	+57.0	669	8.3
D. M. & N.	560	6,642,542	928,749	94,522	9.5	1,655	14.0
D. S. S. & A.	556	1,835,246	297,142	+50,740	+20.0	535	16.2
Duluth, Winnipeg & Pac.	178	1,049,786	257,948	19,310	7.0	1,450	24.7
Great Northern	8,278	50,061,214	6,859,727	122,138	3.0	828	13.7
Green Bay & Western	234	1,136,580	248,390	48,319	16.0	1,060	21.9
Lake Superior & Ishpeming	160	1,067,000	319,299	+89,749	+39.0	1,990	30.0
M. & St. L.	1,636	6,763,000	539,310	106,814	16.5	329	7.9
Northern Pacific	6,725	44,093,000	6,088,304	+34,247	0	905	13.8
O. W. R.R. & N.	2,266	13,179,000	2,095,290	+466,057	+28.0	927	15.9
Spokane International	163	539,000	78,148	+763	+1.0	479	14.5
S. P. & S.	552	3,532,000	401,349	8,213	1.7	727	11.3
M. St. P. & S. S. M.	4,297	19,439,000	1,836,092	75,707	3.8	427	9.5
Northwestern Region	43,470	$315,975,257	$37,155,980	$1,018,002	2.5	$860	11.8

Table II—Materials and Supplies in Stock, January 1, 1936 (Continued)

	Miles operated	Operating expenses	On hand, 1935	Decrease	Per cent decrease	On hand per mile, 1935	Per cent of op. exp., 1935
Alton	950	$11,670,000	$1,328,387	+$149,128	+13.0	$1,400	11.4
A. T. & S. F.	13,285	109,423,000	16,896,457	737,638	4.0	1,270	15.4
C. B. & Q.	9,035	62,544,000	7,591,010	894,619	10.5	840	12.1
C. R. I. & G.	722	2,856,000	227,800	+38,067	+20.0	315	8.0
C. R. I. & P.	7,575	56,973,000	4,838,369	30,995	1.0	640	8.5
Colorado & Southern	1,019	5,033,000	291,570	24,706	8.0	286	58.0
D. R. G. W.	2,592	16,135,000	2,600,882	+157,721	+6.0	1,005	16.2
Denver & Salt Lake	232	1,276,000	352,132	61,476	14.5	1,520	27.6
Ft. W. & D. C.	804	3,884,000	539,763	+82,427	+17.5	671	13.8
L. A. & S. L.	1,240	11,535,000	1,231,004	+247,123	+25.0	995	10.7
Nevada Northern	165	298,000	96,800	543	0	586	32.4
Northwestern Pacific	372	3,066,000	189,907	60,467	24.2	510	6.2
Oregon Short Line	2,504	16,220,000	3,169,558	+293,044	+10.0	1,270	19.5
St. Joseph & Grand Island	258	1,806,000	46,555	100,346	68.2	180	2.5
San Diego & Arizona	145	545,000	68,439	7,273	9.5	471	12.5
Southern Pacific Sys.	13,224	118,676,000	15,593,198	1,608,646	9.5	1,178	13.1
Toledo, Peoria & Western	239	1,377,000	235,582	+59,901	+34.0	985	17.1
Union Pacific	3,593	52,466,000	10,256,403	+384,714	+4.0	2,860	19.6
Utah	111	706,000	195,185	+2,294	+1.5	1,760	27.6
Western Pacific	1,213	10,594,000	1,719,907	55,741	3.0	1,420	16.2
Central Western Region	59,278	$487,083,000	$67,468,908	$2,168,035	3.0	$1,140	13.8
Burlington-Rock Island	271	$996,000	$111,731	$577,976	83.9	$412	11.2
Gulf Coast Lines:							
N. O. T. & M.	191	1,392,000	571,936	+1,316	+0.5	2,990	41.1
St. L. B. & M.	597	3,596,000	355,418	+18,303	+5.0	595	9.9
S. A. U. & G.	316	915,000	39,159	8,010	16.7	124	42.8
International-Great Northern	1,154	9,599,000	1,480,277	187,942	11.0	1,280	15.5
Kansas City Southern	878	7,205,000	1,097,536	78,282	6.7	1,250	15.2
Kansas, Okla. & Gulf	326	1,077,000	65,002	5,118	7.2	199	6.1
La. & Ark.	608	3,122,000	705,435	+63,194	+9.5	1,160	22.6
La., Ark. & Texas	255	754,000	156,099	9,027	5.5	613	20.7
Midland Valley	361	728,000	124,499	+3,727	+3.0	344	45.5
Mo. & N. Ark.	364	788,000	56,804	59,532	51.0	156	7.2
M-K-T	3,293	21,516,000	2,717,986	483,693	15.0	824	12.6
Missouri Pacific	7,232	60,750,000	6,579,313	704,246	9.5	910	10.8
Okla. City-Ada-Atoka	132	261,000	7,311	1,218	14.5	...	...
Ft. Smith & Western	249	619,000	161,555	24,580	13.5	650	26.1
St. L.-S. F. System	5,474	37,548,000	4,234,058	331,175	9.0	774	11.3
St. L. Southwestern	1,788	10,735,000	970,892	233,440	19.2	545	9.0
Texas & Pacific	1,949	15,990,000	3,201,547	+372,929	+13.0	1,640	20.0
Texas Mexican	162	882,000	91,526	+11,864	+15.0	565	10.4
Wichita Falls & Southern	203	415,000	44,567	8,847	16.5	219	10.7
Southwestern Region	25,803	$178,888,000	$22,772,651	$2,241,753	9.2	$880	12.7
Chesapeake & Ohio	3,111	$63,289,000	$3,907,805	$168,839	4.0	$1,255	6.2
Norfolk & Western	2,168	44,499,000	5,950,160	+778,875	+15.0	2,760	13.4
R. F. & P.	117	5,407,000	765,301	+26,746	+4.0	6,540	14.2
Virginian	619	7,178,000	1,531,719	+76,613	+5.0	2,480	21.4
Pocahontas Region	6,015	$120,373,000	$12,154,985	+713,400	+6.5	$2,000	10.1
GRAND TOTAL—ALL REGIONS	231,782	$2,579,954,420	$279,692,285	$14,755,273	4.5	$1,200	10.8

The Florida Hurricane

(Continued from page 385)

rangements had been completed and cars were again moving on a through basis to and from Cuba via car ferry from Port Everglades, a new port near Hollywood, Fla., a few miles north of Miami. It was necessary to transfer the car ferries from Key West to Port Everglades, and they brought with them the equipment that had been marooned at Key West. They also transported the huge apron used in transferring cars between the railway and car ferries, and this was installed at Port Everglades.

Although the time in transit for car ferries between Port Everglades and Havana is 12 to 13 hr. longer than between Havana and Key West because of the greater distance, the schedules have been worked out so as to provide identical freight service between Cuba and northern destinations via Port Everglades as via the former Key West route. This was facilitated by the fact that under the old arrangement, the exigencies of the perishable schedules made it necessary to yard Cuban cars at Miami to await connections, whereas now they are taken directly from the car ferries and consolidated with northbound perishable trains which depart immediately.

The railroad is making a substantial saving by the elimination of the haul from Port Everglades to Key West. The receivers are making an allowance to the car ferry company of approximately $1 per ton on the principal commodities moving to compensate it for its additional operating expenses, as the haul from Port Everglades to Havana is 230 miles as against 92 miles from Key West. After paying this the railroad is earning approximately 70 per cent of the total freight revenue on export and import traffic that it was earning to and from Key West, as the rate on a large percentage of such traffic is the same to Port Everglades as to Key West. With the saving of the haul between Port Everglades and Key West and maintenance charges on the Key West extension, the Cuban traffic can be handled more profitably via Port Everglades than it can be handled through Key West.

Thus, in spite of a major disaster, the Florida East Coast was able, in a very short time, to restore its Cuban schedules to the same, and, in some cases, a slightly better basis than before. The railway is prepared to continue this service indefinitely.

THE NEW SOUTH WALES (AUSTRALIA) DEPARTMENT OF RAILWAYS reported, for the year ended June 30, 1935, a deficit, after interest and exchange charges, of £1,283,511 as compared with a 1933-34 deficit of £2,588,127. All classes of freight and passenger traffic increased as compared with 1933-34, bringing a gross revenue rise of £1,112,513. Meanwhile operating expenses increased by only £362,138, leaving the net improvement in financial results at £750,375. In recent years there has been a progressive reduction in annual deficits on these government-owned lines; the loss for the year ended June 30, 1932, for example, was £4,564,605 and that of 1932-33 was £3,360,482.

Diesel-Electric Freight Locomotive

Westinghouse completes unit weighing 133 tons and developing 1,600 horsepower

By J. R. Wilson
Westinghouse Electric & Manufacturing Company

A 1,600-HP. 133-ton Diesel-electric locomotive has been completed by the Westinghouse Electric and Manufacturing Company. The specifications drawn up before the locomotive was built required that the total weight be carried on four driving axles, that the mechanical features be sufficiently simple and durable to meet the most severe freight service requirements, that all ordinary maintenance of power plant and auxiliary apparatus could be carried out without dismantling the cab structure and that the unit be suitable for one-man operation.

The locomotive consists of a visibility-type cab and two equipment hoods mounted on an integral cast-steel underframe, carried on two four-wheel, swivel-type trucks. The centrally located operator's cab has its floor and roof raised above the levels of the main floor and hood roofs, respectively, and is built to a width exceeding that of the equipment hoods and supporting underframe, which, with suitably arranged windows, provides for visibility both over and along the sides of the equipment hoods. Operator's cab and equipment hoods are streamlined to a degree sufficient to avoid the box car appearance frequently found in units of this type. A Diesel power plant with its auxiliary equipment is housed in each of the equipment hoods.

The underframe incorporates storage reservoirs for fuel and lubricating oil, mounting rails for the engines and generators, air ducts for traction-motor ventilation, truck center plates, cab side bearings and bolsters, draft-gear housings, four sand boxes and push-pole pockets.

The trucks have integral cast-steel frames, side equalization with semi-elliptic springs, clasp brakes, carbon-steel axles, A.A.R. boxes and brasses with 8-in. by 14-in. journals and rolled-steel wheels. All wearing surfaces on the truck frame and underframe are protected with hardened-steel plates and holes for brake-hanger pins are bushed. Truck and underframe center plates are likewise bushed with hardened-steel bushings.

Driving journals are oil lubricated and hub liners and center plates are arranged for Alemite lubrication. Pedestal ways are oil lubricated from oil and waste pockets on the box.

The unit is equipped with A.A.R. type E, 6-in by 8-in. shank swivel-butt couplers and Miner friction draft gear, Peacock type hand brake, Graham-White sanders, Pyle National headlights and number boxes, and air-operated window wipers and bell.

The Diesel engines are rated 800 hp. each at 900 r.p.m. They are of the solid-injection, twelve-cylinder, V-type, operating on the four-stroke cycle. They have integral cast-steel crankcases which are machined for cylinder liners and heads, main bearings, cam-shaft bearings, gear

case and fuel pump mountings and inspection cover plates. All engine auxiliaries, such as main fuel pump, water pumps, lubricating-oil pressure and scavenging pumps, governor oil pump and cam shafts, are driven by a train of gears located at the front end of the crankcase.

Each crankshaft is forged from alloy steel, machined throughout, counterbalanced and drilled for pressure lubrication of crank pins from main bearings. It is supported on the underside of the crankcase in seven main bearings. A friction disc type of vibration damper is fitted on the front end of the shaft and the rear end is flanged for the flywheel mounting and generator coupling.

Removable liners of nickel cast iron are fitted in the crank case. The upper end of the cylinder liner is clamped rigidly in place between the cylinder head and crankcase, and the lower end fits in heat-resisting rubber-compound water-seal rings.

Each cylinder is provided with an individual cylinder head, cast from aluminum alloy with steel valve seats for dual inlet and exhaust valves. Brackets cast integrally with the head, support the rocker-arm shafts. The valve operating mechanism consists of forged-steel rocker arms fitted with ball ends of heat-treated steel, arranged for adjusting valve clearances, and push rods, made from steel tubing, provided with sockets made from heat-treated steel. The entire mechanism is arranged for pressure lubrication.

In the upper and outer sections of the crankcase are cored chambers for cam shafts, one for each bank of cylinders. The cam shafts are made from high-grade steel and heat treated. The cams are forged integrally with the shaft and ground to a master cam.

The pistons are made from an aluminum alloy and machined for pressure and oil-control rings. The piston pins, of the full floating type, are hollow bored, polished, and fitted with aluminum end caps. The connecting rods are forged from steel, heat treated, and fitted with bronze bushing for the piston pin, and a babbitted shell for the crank-pin bearing.

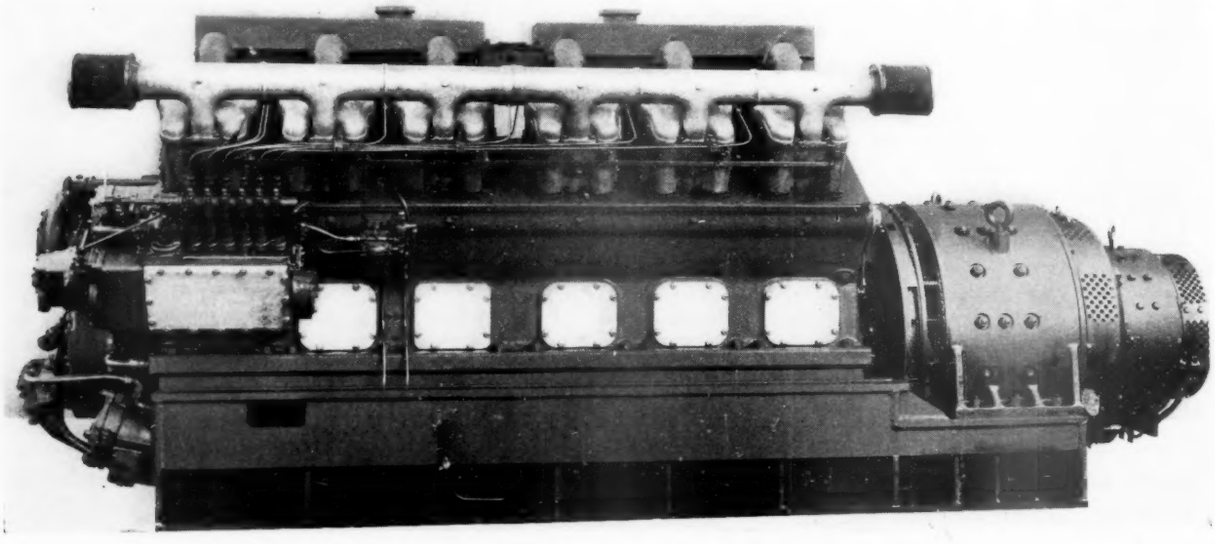
The fuel injection system consists essentially of a motor-driven gear pump, taking fuel oil from the main reservoir and delivering it through strainers to the main-fuel-pump headers, at a pressure of approximately 30 lbs. per sq. in. A main fuel-pump assembly, consisting of six units, is mounted on each side of the crankcase, serving the six adjacent cylinders. The fuel pump operating shafts run at one-half crankshaft speed, and their angularity with respect to the crank shaft is advanced or retarded automatically to advance or retard the time of injection, dependent upon engine speed. Fuel oil is admitted from the oil header of the main fuel pump to the fuel-pump cylinder during the downward stroke of the pump plunger, and the pressure developed in the pump cylinder during the upward stroke of the plunger lifts the atomizer needle valve when a pre-determined pressure is developed, and atomized oil is injected into the engine cylinder at the proper instant during the compression stroke. The volume of oil injected per stroke is automatically controlled by the governor. The atomizer, located in the center of the cylinder head, consists of a spring-loaded needle valve and a nozzle having a number of small holes drilled in the tip. The needle-valve spring prevents injection of oil into the cylinder until the fuel-pump plunger develops the proper pressure for atomization during injection.

Each engine has a governor of the oil-pressure type similar to that used in marine service for many years. It is of the variable-speed type, permitting operation of the Diesel engines at any desired speed with its operating range and limiting the engine speed to suit the power requirements of the locomotive. Safety features provide for automatically stopping the engine in case of overspeed or reduction of lubricating-oil pressure below a safe value.

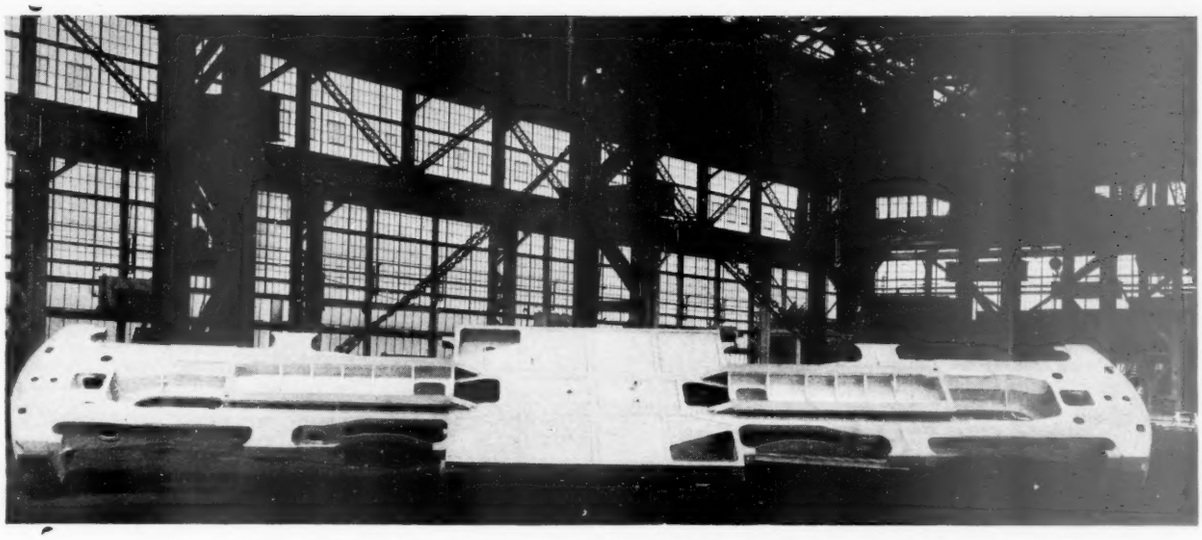
Electrical Transmission

Each power plant has a single-bearing main generator which converts the mechanical power at the engine shaft to electrical energy for use by the traction motors. The armature shaft is flanged and directly connected to a similar flange on the engine shaft with the web of the engine flywheel interposed between the two flanges. Both engine and generator shaft ends are machined to fit into the flywheel bore to insure concentricity and facilitate alinement. The outer end of the main generator shaft is carried on a self-alining, non-thrust type ball bearing.

An auxiliary generator is mounted on each of the main-generator bearing brackets, with its armature on an extension of the main generator shaft. A fan, mounted on each engine flywheel draws air through the main and auxiliary generators, cooling both ma-



Each Power Plant Develops 800 Hp. at 900 R.P.M.



The Underframe Is an Integral Steel Casting

chines. The main generators are used as motors for cranking the Diesel engines during starting.

Four traction motors, utilizing the electrical power furnished by the main generators supply the propelling force for the locomotive. One motor is geared to each of the driving axles through a pinion on the motor shaft and a gear on the driving axle. The gearing is a spur type, machined from steel forgings and heat treated.

The traction motors are of the direct-current series type, force ventilated and equipped with roller-type armature bearings and split-sleeve type axle bearings.

Control Equipment

The locomotive is equipped with Westinghouse standard dual control, developed especially for Diesel-electric locomotives to provide maximum flexibility with one-man operation.

Pedestal-type controllers and brake-valve operators are located at each of the operating stations. Their shafts extend through the cab floor, and are interconnected with sprocket gears and chains. One of the controllers is equipped with master control drums and the customary interlocking between the power and reverse levers, and the other is equipped with operating shafts only. A standard K14 brake valve, minus the handles, is located directly below one of the brake-valve operating pedestals with their corresponding shafts connected together.

This system as a whole provides the maximum in flexibility of locomotive operation, in that the operator has complete control of locomotive power and reverse levers and automatic and independent brake levers at either operating station, and may move from side to side of the locomotive either before applying power or while a locomotive movement is in progress, without shutting off power. This arrangement eliminates the use of transfer switches and cutout cocks used ordinarily where two complete sets of controllers and brake valves are used, and enables the operator to take the position affording the best visibility of ground crew, tracks and surrounding conditions, at any time.

The power lever of the controller operates electro-pneumatic motor switches and the engine governor for increasing or reducing the speed of the Diesel engines. A sliding handle on this lever permits changing from the series connection to the parallel connection of the traction motors or the reverse, with closed-circuit transition, on any engine speed notch, without shutting off power. The last position of the power lever, which may be taken only in the parallel position of the handle, provides for field shunting of the traction motors, with consequent increase in locomotive speed. On shutting off the power lever, a cam on the controller head sets the handle for the series connection on the next application of power. The reverse lever of the controller, controls an electro-pneumatically operated reverser, governing the direction of locomotive movement.

Engine loading is controlled over the range of generator voltage and current by the Westinghouse torque-control system. It operates to regulate the generator field current and voltage to maintain constant horsepower output at the engine shaft over a wide range of tractive force and speed. It insures full-speed operation of the engine at reduced engine torque in the event unusual conditions result in a momentary reduction in engine torque.

Magnetically operated contactors make and break the various circuits to generator fields and to the auxiliary motors. Meter and gage panels, located at each operator's station, include meters for indicating main generator amperes, battery amperes, engine jacket water and oil temperatures, and gages for the air-brake equipment.

The initial starting of each engine is controlled from positions adjacent to the respective engines. Starting and stopping of each engine may be controlled from the operator's station by electro-pneumatic mechanisms after main-reservoir air pressure has been pumped up. The starting battery consists of a 50-cell, Exide Ironclad battery having 15 plates per cell.

The control is arranged for the operation of all traction motors from either power plant, with the second power plant non-operative. The change-over is controlled from the operator's cab in a very short time. This provides full tractive force for work requiring only 800 engine horsepower.

Foot-operated push buttons are located, one at each operator's station, for controlling weight transfer compensating switches to permit working all drivers at maximum adhesion when the greatest starting tractive effort is required.

Arrangements are provided for sanding the rail in front of the leading wheels of both trucks for either direction of locomotive movement.

Engine Cooling System

Adequate engine radiator capacity has been installed to permit continuous operation at full engine horsepower under the hottest weather conditions encountered, with-

out exceeding safe operating temperatures of jacket water and lubricating oil. Since the horsepower required from the engines varies with service conditions, and the volume of air required for cooling varies with the season and climate, motor-driven blowers were adopted for force ventilating the radiator. The operation of the blowers is under the control of thermostats located in the lubricating-oil and jacket-water systems, which automatically stop operation of the blowers when they are not required. Auxiliary manual control of operation of blower motors has also been provided.

The radiators are of the finned tube, sectional core type, made from seamless copper tubes, five rows deep, having six fins per inch, brazed to header sheets, which in turn are brazed to header castings. The sections are bolted to water and oil rails, using Vellumoid gaskets at the joints. The radiators are mounted on the equipment hoods at an elevation which permits the water and oil sections to drain into jacket-water tanks and a lubricating-oil reservoir, respectively, when the engine is shut down, thus eliminating need for anti-freeze solution in the jacket water system at any time during lay-

General Characteristics

Starting tractive force at 30 per cent adhesion	80,000 lb.
Tractive force at continuous rating of traction motors	32,000 lb.
Speed at continuous rating of traction motors	15.6 m.p.h.
Maximum operating speed	50 m.p.h.
Minimum radius of curvature:	
Locomotive alone	85 ft.
Locomotive with load	175 ft.
Length inside coupler knuckles	52 ft. 11 in.
Length over operator's cab and hoods	49 ft. 8 in.
Overall width	10 ft. 2 in.
Heights from Rail:	
Overall (at operator's cab)	14 ft. 1 in.
Over hoods (at coupler ends)	11 ft. 8 in.
Truck center distance	27 ft. 0 in.
Truck wheel base	8 ft. 6 in.
Wheel diameter	44 in.
Capacity of fuel oil reservoir	1,000 gal.
Capacity of sand boxes	5,000 gal.
Capacity of jacket water system per engine	210 gal.
Capacity of lubricating oil reservoirs per engine	85 gal.

over periods of the locomotive. The general arrangement of the radiating system insures cooling unaffected by locomotive speed, direction of operation, or windage conditions.

Air-Brake Equipment

Westinghouse modified schedule 14-EL air-brake equipment with quick application and release feature is used. Two single-stage, two-cylinder, water-cooled air compressors, each having 120 cu.-ft. displacement, driven by a 115-volt, direct-volt, direct-current, series motor, furnish air for the operation at the brakes and electro-pneumatic control equipment. Both compressors and motors are equipped with ball bearings.

Cooling water for the air compressor is taken from the engine crank-case jacket at the pressure existing therein, and piped from the compressor to the engine radiating system. The compressor operates from the main generator during engine idling periods and from the auxiliary generator during periods when the main generator is furnishing power to the traction motors. This insures full-speed operation of the compressor under practically all locomotive operating conditions.

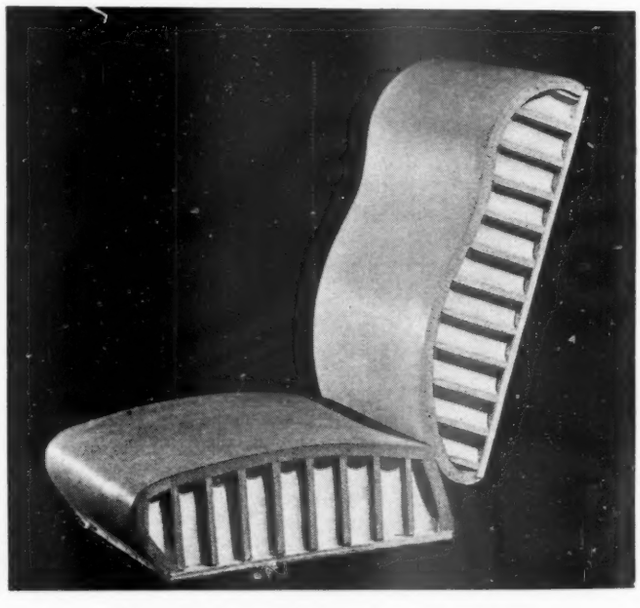
The transfer of the compressor motor from the main generator to the auxiliary generator and vice versa is controlled automatically without attention from the operator. A compressor governor operates to cut off power to the compressor motor when full reservoir pressure is attained.

Two 14-in. by 10-in. brake cylinders are mounted on each truck, one cylinder being connected to the brake rigging on each side of the truck. An auxiliary hand brake is connected to one truck for holding the light locomotive at standstill.

The size of the engine hood and general clearances around the Diesel engine permit all ordinary maintenance of the engine, such as removal of cylinder head for valve grinding, or of a piston for ring renewal, without removing the hood roof. The light weight of these parts permits handling them manually without the use of a crane; likewise, the main and auxiliary generators, control equipment, compressor, and blower sets, located in the equipment hoods, may be maintained without removal of the hood roof or side sheets.

Latex Cushions and Backs for Car Seats

A TYPE of cushions and backs for the seats of railroad passenger cars and buses, formed of vulcanized cellular rubber foam, is announced by the Mishawaka Rubber & Woolen Manufacturing Company, Mishawaka, Ind. Because of the thousands of tiny, intercommunicating rubber cells they have a vibration- and shock-absorbing action said to be several times that of the usual style of cushion. They are likewise completely porous so that in action they are self-ventilating



Section of Mishawaka-Seat Cushion and Back

—air constantly being forced through them, in use, thereby keeping them cooler than the conventional cushion.

Other advantages claimed for these cushions include a reduction in maintenance expense because they do not sag or break down; and because they are moulded to the exact shape and size desired installation cost is reduced. Likewise, because padding and stuffing are unnecessary, trimming cost is reduced to a minimum. In cases where it is desirable to save head and leg room these cushions have an advantage over conventional cushions because they do not need to have similar thickness for equal resiliency and shock-absorbing action.

These cushions, following submission to severe laboratory testing, are now in use on a number of railroad and bus lines.

I.C.C. Orders Lower Fares in East

Time-honored basis of 3.6 cents per mile found unreasonable—Four commissioners dissent, two not participating

WASHINGTON, D. C.

FINDING the regular basic railroad passenger fare structure throughout the country to be unreasonable and "out of harmony with present-day conditions," the I.C.C. on February 28 issued a report and order in its general passenger fare investigation prescribing a reasonable maximum future fare basis of 2 cents a mile in coaches and 3 cents a mile in Pullmans, effective on June 2. This will affect principally the eastern railroads which have maintained the regular fare basis, except for special fares. The lower experimental fare bases in effect in the Southern and Western districts were found not to be unreasonable or otherwise unlawful. The Pullman surcharge was found to be unreasonable and its elimination was required but extra fares now charged on some trains for extraordinary and supplemental or alternative Pullman service were held to be not shown unreasonable or otherwise unlawful. Passenger fares in some instances were found to be in violation of Section 4 of the Interstate Commerce Act.

The decision was reached by a vote of five commissioners to four, showing much the same difference of opinion among the Commissioners as exists between differently situated railroads. Commissioners Mahaffie, Meyer, McManany and Lee wrote dissenting opinions, while the majority followed the recommendations of the proposed report submitted last year by Examiner Irving L. Koch. Commissioner Tate did not participate because of illness and Co-ordinator Eastman ordinarily does not participate in commission decisions unless there is a tie.

Rate reductions were ordered for eastern territory on the theory that although present fares do not meet the cost for the present volume of traffic lower ones will produce a much greater volume. The dissenting commissioners, however, believe that the experimenting should be done by the railroads, that the experience of the western and southern lines is not necessarily a guide for the eastern lines and Commissioner Meyer expressed the opinion that special fares much lower than 2 or 3 cents may be necessary to recover a large volume of business from the private automobile.

The majority of the commission summarized the major findings of fact and conclusions as follows:

Summary of Fact Findings

Summarized, we make the following major findings of fact:

1. The passenger traffic and revenues of respondents generally have shown a fairly gradual and continuous decline from 1924 to 1933, inclusive. This was true during the more prosperous years from 1924 to 1929, inclusive, and during the depression years from 1930 to 1933, inclusive. They declined from the peak year of 1923 by 40.4 per cent by 1929, before the depression began, and 74.9 per cent by 1933 in number of passengers carried; 23.5 per cent by 1929 and 61.9 per cent by 1933 in passenger-miles; and 26.1 per cent by 1929 and 73.8 per cent by 1933 in passenger revenue. Stated another way, the intercity passenger-miles by rail declined from their peak in 1920 of 47 billion to 31 billion in 1929 and 16 billion in 1933, whereas those by public highway increased from 28 billion in 1920 to 203 billion in 1929, of which 201 billion were by private automobile, and to 191 billion in 1933, of which 185 billion were by private automobile.

2. Since 1933 the passenger traffic and revenues of the eastern respondents generally, under their present basic fares, have shown no material improvement, and indeed in the first seven months of 1935 have continued to decline. The passenger traffic and revenues of the southern and western respondents generally, and of the Norfolk & Western in the eastern district, under their new reduced basic fares, have shown marked improvement and are continuing to improve.

Traffic Moving Freely in West and South

3. Due to the high basic fare of 3.6 cents per mile, together with the pullman surcharge, the passenger traffic by rail did not freely move, and is not now freely moving in the eastern district where that fare is still maintained. In the southern and western districts and on the Norfolk & Western, where the reductions set out in this report were made, the passenger traffic by rail is freely moving.

4. The decline in the passenger traffic and revenues of respondents generally, before as well as during the depression, has been so severe that immediate extraordinary measures are imperative in order to enable the railroads to continue in the passenger business, and to effectively compete for passenger traffic, especially for the increased intercity traffic of the future.

5. The passenger market of the future looks as promising as at any time in the history of the country, but the railroads cannot hope to share reasonably in that market except at fares more nearly commensurate with the cost and convenience of travel by highway, and with changed economic conditions.

6. The modest success achieved by respondents in partly stemming the decline in passenger traffic and revenue by improved service and facilities, together with the favorable revenue results from experiments in reduced fares in the southern and western districts and on the Norfolk & Western, is convincing that the principal remaining remedy for the passenger difficulties of respondents is a reduction in fare.

7. Improved revenue results in the southern and western districts and on the Norfolk & Western under the experimental fares are due largely to such reduced fares and not in any great degree to improved business conditions, and such revenue results may be expected to continue to improve under the lower fares as the public becomes increasingly alive to the enhanced passenger advantages offered by rail.

Conditions in East Similar to Other Sections

8. The circumstances and conditions affecting passenger traffic in the eastern district, as compared with the southern and western districts, are substantially similar and do not differ in sufficient degree to warrant the opinion that material reductions in fare in the eastern district would not result in improved passenger revenue for the eastern respondents.

9. Changed economic conditions, including reduced commodity prices and average income, together with the generally cheaper cost and greater convenience of travel by highway, have so affected the value of the rail passenger service to the public that a fare basis which was reasonable maximum before severe highway competition, and especially before the fall in recent years in commodity prices and average income, is out of harmony with present-day conditions.

10. Considering the greater costs to respondents for furnishing the pullman service than for furnishing the coach service, and the greater effect of highway competition upon the coach than upon the pullman service, a spread of at least 1 cent per mile between one-way fares for the two services in standard equipment is justified for application by respondents generally. This finding should not be interpreted to mean that a smaller spread than 1 cent could not be justified, provided it is not

brought about by the maintenance of fares which exceed those on the bases herein found to be reasonable maximum.

11. Giving appropriate consideration to all of the evident circumstances and conditions which are likely to affect the ultimate revenue result to respondents, a maximum fare basis, one way and round-trip, for general application, of 2 cents per mile in coaches and 3 cents per mile in pullmans would be most likely to lessen the transportation burden of respondents and to harmonize with present-day economic conditions, with consequent fuller assurance to the respondents of realizing a fair return upon their property investment. There is doubt whether at least in the southern district a coach fare of 1.5 cents per mile is not producing better revenue results for those respondents than would any higher fare, and it may also be that round-trip fares on both coach and pullman traffic at a lower rate per mile than the one-way fares herein prescribed would bring to respondents better revenue results than the higher fares. These matters are left to the discretion of respondents.

Why 3-2 Cent Basis Is Favored

12. In the eastern district the approximate average cost of conducting the passenger service, based on the year 1933, the latest for which figures are of record, is 3.72 cents per passenger-mile in pullmans and 2.32 cents per passenger-mile in coaches other than suburban. In the same district and year the passenger-mile revenue was 3.24 cents in pullmans and 2.05 cents in coaches other than suburban, deficits of 0.48 cent and 0.27 cent, respectively. These results are based upon an average car occupancy in 1933 of 7.4 passengers in pullmans and 12.2 passengers in coaches other than suburban. An increase in this average car occupancy of only 1 passenger in both pullmans and coaches would have been sufficient to turn these deficits into a profit. Under the reduced fares in the West and in the South and on the Norfolk & Western in the East the average car occupancy has been increased more than sufficient to absorb, not only the decrease in average passenger-mile revenue caused by the reduction in fare, but at least a portion of the deficits formerly resulting from this traffic. Based upon the actual results obtained under the reduced basic fares in the other districts and on the Norfolk & Western, a maximum basis of 3 cents in pullmans and 2 cents in coaches applied generally in the eastern district is more likely than any other maximum basis to eliminate the deficits from the passenger service in the eastern district and to again put that service on a profitable basis.

13. The pullman surcharge has met with such marked public disfavor and resistance that it is resulting in far greater injury than benefit to respondents.

14. Extra fares on a limited few of respondents' trains between the principal cities for extraordinary pullman service appear to be beneficial and desirable to both respondents and the public, provided that the passenger service rendered between the same points at the regular fares is speedy, comfortable, and fully adequate.

Conclusions

We conclude that:

1. The pullman surcharge is and for the future will be unreasonable, and should be eliminated.

2. The regular passenger-fare structure of respondents is and for the future will be unreasonable in violation of section 1 and in contravention of section 15a of the act to the extent that it exceeds or may exceed fares of 2 cents per passenger-mile, one way and round-trip, in coaches, and 3 cents per passenger-mile, one-way and round-trip, in standard pullman cars; without prejudice to the maintenance of lower fares in coaches or in pullman cars, or both, in any one or more of the major districts of the country; provided, that reasonable extra fares, in addition to the regular passenger fares and pullman charges for space, may be charged for passenger service which is definitely superior to that generally furnished, upon the condition that reasonably prompt and comfortable regular through service without extra fare be available to the public at hours which are substantially as convenient as those at which the extra-fare service is operated; and provided further, that this conclusion is subject to the exceptions to the maximum bases for general application set forth in the report under the heading "Exceptions to the General Basis."

3. The present experimental fares in the southern and western districts and on the Norfolk & Western are not unreasonable or otherwise unlawful.

4. The present extra fares wherever maintained are not shown to be unreasonable or otherwise unlawful.

Fourth Section Violations

5. Many of the present fares are violative of section 4 of the act in that, while subject to varying designations or to varying time-limit, stop-over, or baggage restrictions, they are, nevertheless, fares of the same character. Respondents will be expected to abide by the law in respect of these fares.

Nothing herein is intended to restrain respondents from exercising their right under section 22 of the act to issue mileage, excursion, or commutation passenger tickets.

All outstanding section 13 orders affecting intrastate fares which are inconsistent with the conclusions herein reached will be modified so as to permit the bases prescribed or authorized herein to become effective or to continue in effect, as the case may be.

In publishing fares in response to the conclusions and order herein a minimum charge of 10 cents for all classes of equipment may be observed, and sufficient may be added to the fares resulting under the bases herein prescribed so that all of them will end in 0 or 5.

It is understood that many passenger tariffs are now in an unsatisfactory condition, chiefly because they fail to conform in all respects to the governing rules in Tariff Circular 18-A and because the fares on many important interline movements have to be made by combination, the lowest of which in each instance is frequently difficult to determine. Respondents will be expected, as promptly as practicable, to make their tariffs conform to the governing tariff rules, and to publish, in serviceable manner, through interline fares between all important points. The term "important points" will be understood to mean all points having a population, according to the latest official census, of 5,000 or more, provided that this admonition is not authority to cancel interline fares from or to any points having a population of less than 5,000 where such fares are now in effect. An appropriate order will be entered.

The Position of the "Three Systems"

The position of the "three systems" (the New York Central, the New Haven and the Pennsylvania) which were the principal opponents of a reduction in the basic rate is summarized in the report in part as follows:

Since the three eastern systems handle such a large percentage of the country's passenger traffic, these systems feel that such basic fare should be determined with primary regard for their needs. The three systems are the largest passenger-carrying railroads in the country. Their combined passenger revenues in 1935 were $127,189,546, as compared with $36,248,216 in the southern district and $89,098,475 in the western district. The eastern carriers believe that the problem of what the reasonable basic fare should be is different in the East than in the South or in the West, and that a reduction in the basic fare in either of those districts is no criterion of what such fares should be in the East.

The number of passengers carried in the eastern district was 64.9 per cent of the total for the country in 1934, 68.5 per cent in 1933, 72.9 per cent in 1932, and 68.4 per cent in 1929. These percentages may be compared with those corresponding for the southern district of 16.2 in 1934, 13.6 in 1933, 7.8 in 1932, and 10.2 in 1929. In respect of passenger revenue the percentages for the eastern district were 58.3 in 1934, 58.3 in 1933, 58 in 1932, and 53 in 1929; and for the southern district they were, respectively, 12.1, 11, 10.5, and 12.4. The eastern district had 49.2 per cent of the passenger-miles for the country in 1934, 51.7 in 1933, 52.6 in 1932, and 50.3 in 1929, while the corresponding percentages for the southern district were 14.8, 13.4, 11.7, and 12.2. Taking the year 1922 as 100, the passenger results for 1934 in the eastern district reflect a ratio of 38.6 in passengers carried, 36.2 in passenger revenue, and 49.3 in passenger-miles. In 1929 these ratios were, respectively, 69.8, 87.2, and 87.8. In the southern district they were, respectively, 59.8, 87.2, and 87.8. In the southern district they were, respectively, 42.7, 26.6, and 52.4 in 1934, and 46.5, 72.5, and 75.3 in 1929. It thus appears

that while in the southern district the passenger revenue in 1934 was 36.7 per cent of that in 1929, in the eastern district it was 41.5 per cent, although the latter reflected a much smaller increase over the low year of 1933 in both districts than was the case in the southern district; and that while in the southern district the passenger-miles in 1934 were 69.6 per cent of those in 1929, in the eastern district the corresponding percentage was 56.

"Three Systems" Handle One-Third of All Traffic

The three systems represent 37.7 per cent of the total class I mileage in the eastern district and 12.9 per cent of that in the country. In 1934 they carried 40.8 per cent of the total rail passengers in the country, earned 42.3 per cent of the passenger revenue, and produced 32.7 per cent of the passenger-miles. In the same year they carried 63 per cent of the total for the eastern district, earned 72.7 per cent of the revenue, and made 66.6 per cent of the passenger-miles. This relative showing is more favorable than that for 1929 in respect of passenger revenue, but not as favorable in respect of passengers carried and passenger-miles. Using 1922 as a base, the passenger operations of these three systems reflect ratios in passengers carried of 75.9 in 1929 and 41.3 in 1934; in passenger revenue of 94.3 in 1929 and 39.7 in 1934; and in passenger-miles of 93.4 in 1929 and 50.2 in 1934.

Passenger revenue is relatively more important to these three systems than to respondents generally. The passenger-train revenues of all respondents in 1933 constituted about 16 per cent of their total railway revenues, but the percentage of the three systems was 28.5. Passenger revenue alone on these systems was 19.5 per cent of their total revenues in 1933 and 19.8 per cent in 1934.

While the ratio of the passenger revenue to total railway revenues on respondents generally has been declining since 1924, and more markedly since the advent of the depression, that percentage decline has not been as great on the three systems or in the eastern district as in the other districts or in the country as a whole. On the three systems the passenger revenue was 26.4 per cent of the total in 1924, 24.3 per cent in 1930, and 19.7 per cent in the first 9 months of 1934, whereas in the same period the freight proportion increased from 73.6 in 1924 and 75.7 in 1930 to 80.3 in the first 9 months of 1934; so that, while the freight revenue on these roads in the first 9 months of 1934, on an annual basis, had dropped to 58.3 per cent of what it was in 1922, the passenger revenue in the same period was only 39.9 per cent of that in 1922. The corresponding percentages, with 1922 as the base, are, respectively, 68.2 and 36.6 for the eastern district, 64.3 and 26.5 for the southern district, 64.5 and 22.8 for the western district, and 66.3 and 29.9 for the country as a whole. It thus appears that, compared with 1922, the percentage loss in passenger revenue in the southern and western districts was greater than in the eastern district and especially on the three systems, and that on freight revenue the percentage loss in the southern and western districts was less than on the three systems and greater than in the eastern district.

The passenger revenue in the eastern district, and particularly on the three systems, for 1929 does not reflect as great a decline under any previous year as that in the other districts or in the country as a whole. Taking 1923 as the base, the 1929 revenue was 88.4 per cent thereof on the three systems, 81.5 in the eastern district, 64.2 in the southern district, 67.9 in the western district, and 73.9 in the United States. Using the same base, the 1933 revenue reflected percentages of 34.9 on the three systems, 31 in the eastern district, 20.1 in the southern district, 21.3 in the western district, and 26.2 in the United States. Thus while the decline in passenger revenue was not as great in the eastern district as in the other districts, either before the depression or since, it is a fact that even in the eastern district and on the three systems separately those revenues declined quite steadily since 1923, so that by 1933 in the eastern district they were only about one-third of those of a decade before.

Per-Mile Revenue By Districts

The average revenue per passenger-mile on the three systems combined has long been greater than for the eastern district, and since 1928 than for the country. In 1934 it was 2.802 cents, as compared with 2.567 cents in the Eastern district, and 2.165 cents in the United States. This average for the three systems reflects a decrease of 21 per cent under 1923, as compared with 26.2 per cent for the eastern district and 36.5 per cent for the country.

Most of the passenger traffic on the eastern lines now moves at fares below the basic fare. For example, in September, 1934, out of a total of 1,142,637 passengers carried in this country by the New York Central, only about 40 per cent moved at the basic fare based on actual or constructive distance, the other 60 per cent moving at a variety of special fares. Nearly 50 per cent of the passenger revenue for that month, excluding the surcharge and extra fares, accrued from the sale of tickets at the basic fare. Among the principal special fares and the percentages of the total carried thereunder were week-end excursions 13.2 per cent, at an average fare of 2.21 cents;A Century of Progress excursions at 1 cent or less per mile, 7.4 per cent, at an average of 0.66 cents; special excursions at over 1 cent but not exceeding 2 cents per mile, 5.3 per cent, at an average of 1.53 cents; summer excursions, 2.9 per cent, at an average of 2.47 cents; and special excursions at over 2 cents per mile, 1.8 per cent, at an average of 2.28 cents. The average fare paid by all of the passengers was 2.32 cents per mile, excluding extra fares and surcharges, and 2.52 cents including those two items. The average amount received from each passenger was $3.97, and the average distance traveled 157 miles.

The analysis just made for the New York Central appears to be typical of the situation on many of respondents in the eastern district, and is not materially different, so far as appears, from that which existed on respondents generally prior to the reduced basic fares in the South and West. Thus, if the New York Central had done what most of the southern carriers did upon the establishment of their reduced basic fares, namely, eliminated practically all excursion or special fares and all surcharges, it could have reduced its basic fare from 3.6 to 2.5 cents and still, on the same amount of business, obtained approximately the same gross revenue in September, 1934, that it did. On the Pennsylvania in the period April 15 to 21, 1934, inclusive, 59 per cent of the passenger revenue, excluding the surcharge and special-service charges, was derived from the basic fare. On the New Haven in September, 1934, the percentage was 49.8.

Differential Rates

So-called differential fares between eastern and western cities have long been maintained by certain of the eastern carriers. The differentials range from $2 between New York and Chicago over such lines as the Erie, The Delaware, Lackawanna & Western, the New York, Chicago & St. Louis, and the Wabash, to $1 between Chicago and Cleveland, Ohio, over the Nickel Plate.

The three systems offer as their reasons for not experimenting with the basic fares, as have the southern and western roads, the fear that their weakened financial condition might not stand the strain, and that the volume of traffic handled by the highway is not now as important as it will be when greater prosperity returns. They point out that the great proportion of their passenger revenue is derived from their best trains operating between their principal eastern and western termini, and that the bulk of the traffic on such trains is so-called high-class commercial traffic which must use the rails. They believe that this traffic would not be appreciably increased by any reasonable reduction in fare, and that therefore any such reduction would be quite certain to reflect itself in a corresponding reduction in revenue.

Most of this high-class commercial traffic is in pullmans. This is illustrated to a degree by an analysis made on the New York Central for September, 1934. Of the ticket sales at 3 cents or over per mile made in that month, the number of passengers carried in coaches by that respondent was 78 per cent greater than that in pullmans, but both the passenger-miles and the revenue from the pullman passengers exceeded those from the coach passengers by 132 per cent. The revenue of this respondent in that month derived from fares of 3 cents or over was 51.9 per cent of the total passenger revenues, excluding the surcharge and extra fares. Combining all passengers carried by the New York Central in that month, except intra-Canadian, 76.7 per cent were in coaches and 23.3 per cent in pullmans; 50.6 per cent of the passenger-miles were made in coaches and 49.4 per cent in

pullmans; as compared with 40.4 per cent of the total revenue derived from coaches and 59.6 per cent in pullmans. In a test made on the Pennsylvania for one week in April, 1934, the results indicate a somewhat larger percentage of passengers and revenue in coaches, but the ratios of passengers to revenue in coaches and pullmans differ little from those on the New York Central. Of the total number of passengers 87.4 per cent were in coaches and 12.6 per cent in pullmans; 51.2 per cent of the passenger-miles were made in coaches and 48.8 per cent in pullmans; as compared with 44.7 per cent of the total revenue derived from coaches and 55.3 per cent from pullmans.

More Costly Service

The three systems contend that, because of improvements in roadbed and equipment to provide a safe, more comfortable, and faster service, the passenger service which they are rendering today is more valuable and expensive than that of 1920 when the basic fare of 3.6 cents was established. Among the improvements thus detailed are replacement of wooden with steel cars, improvement in locomotives to increase speed so as to insure faster but dependable schedules, installation of greatly improved coaches, remarkable development of air-conditioning in both pullmans and coaches, installation of train-control and other safety devices, and construction of new station facilities and improvement of existing facilities. They point out that it has always been their policy to adjust their facilities and service to meet the demands of the traveling public and to furnish safe and dependable service at a reasonable cost. Their success in this respect, they state, can be judged by their reputation as passenger carriers, by the tremendous volume of their traffic, and by their safety records. They insist that the record justifies a finding that the eastern carriers have attained the objective, common to all respondents, namely, a system of lawful fares which will produce the greatest revenue to the railroads, and that elimination of the surcharge and a reduction in the basic fare would reduce the revenues of the eastern carriers, with the most serious consequences to the three systems.

B. & O. Favors Lower Rates

The two roads in Eastern territory which advocated a decrease in rates were the Baltimore & Ohio and the Norfolk & Western. The position of the Baltimore & Ohio is summarized in the report as follows:

The Baltimore & Ohio contends that the Pullman surcharge as such should be eliminated, and that the existing basic fare in the eastern district should be reduced in coaches to 2 cents one way and 1.8 cents round-trip, and in pullmans to 3 cents one way and 2.5 cents round-trip. It makes no contention that the present basic fare in the eastern district is above a maximum reasonable basis or that the fares which it proposes would be maximum reasonable. Its position is that the existing basic fare and the surcharge have not produced the anticipated result; that elimination of the surcharge and reduction in the basic fare as proposed are necessary in order to meet the changed conditions which have arisen since 1920; and that the problem is to find that measure of fare which may reasonably be necessary to restore to the railroads at least a part of the travel lost to them in past years and thereby secure sufficient use of their passenger transportation facilities to support such service. It regards the results from reductions made in both the southern and western districts to bases comparable to its proposal as sufficient warrant for the position which it has here taken. This respondent has done considerable experimenting with improved equipment, train schedules, and service, but passenger travel has continued to decline, and its management is convinced that the failure to recover traffic must be due to the level of the basic fare.

The passenger revenue of the Baltimore & Ohio dropped from its peak of $30,752,791 in 1923 to $22,138,625, or 28.1 per cent, in 1929 and $9,798,465, or 68.1 per cent, in 1933. The coach passenger-miles, excluding special-excursion, dropped 49.1 per cent from 1923 to 1929 and an additional 87.4 per cent to 1933, and the total passenger-miles decreased by 22.7 per cent from 1923 to 1929 and in 1933 were 46.2 per cent of those in 1923. The revenue from the surcharge dropped from its peak of $1,170,678 in 1926 to $596,213 in 1933. The revenue per passenger-mile was 3.263 cents in 1923, 3.03 cents in 1929, 2.251 cents in 1933, and about 2.182 cents in 1934. Of the number of passengers carried by this road in September, 1934, only 26 per cent traveled at the basic fare, the remainder traveling at fares, ranging from 0.66 cents to 2.94 cents. About 45 per cent of its passengers carried in that month were charged less than 1.5 cents per mile. There was a slight increase in both passenger-miles and revenue, except in revenue per passenger-mile, in 1934 over 1933. Except that the drop in coach passenger-miles and in passenger-mile revenue was somewhat greater, these experiences of the Baltimore & Ohio differ little from those of the eastern district as a whole.

This respondent made an investigation of the reasons for travel by bus instead of by rail between various important cities in the eastern district, the result of which has convinced its management that the choice of the conveyance was controlled by the cost of the trip, and that the existing basic fare is out of harmony with economic conditions and especially with the ability of the public to pay.

N. H. May Need More Equipment

In a statement commenting upon the decision, the trustees of the New York, New Haven & Hartford said in part:

The trustees of the New Haven, pending further study of the decision and order of the commission, and more detailed estimate of the effect of the order upon its passenger revenues, will take no immediate and definite action in the premises.

The reductions carried in the order are roughly estimated to involve a loss in revenue upon passenger traffic in Pullmans in excess of $1,000,000 annually, and a loss in passenger revenue carried in coaches, exclusive of commutation revenue, of nearly $3,000,000 annually.

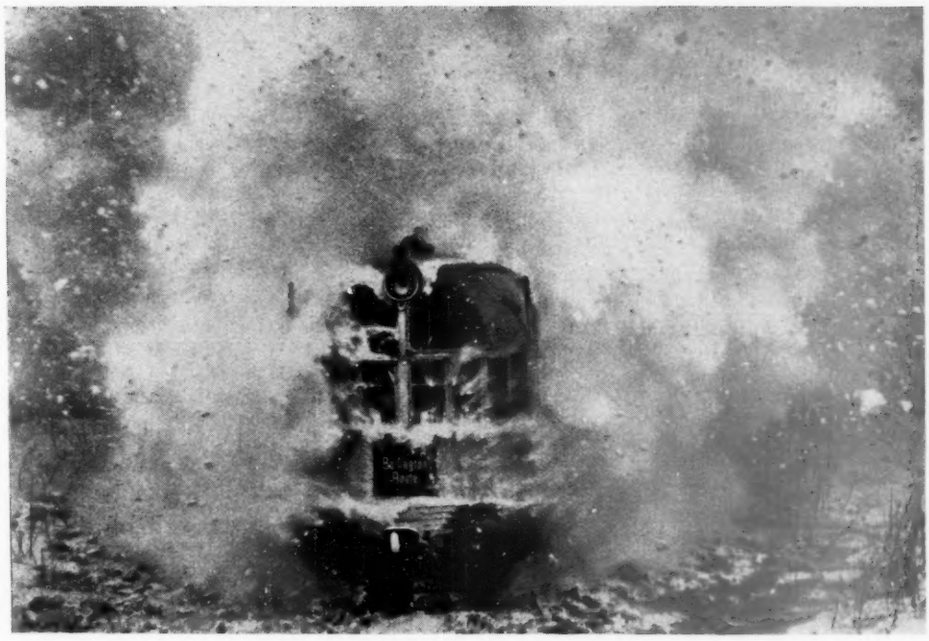
The above estimates make no allowance for increased revenue over 1935 that may accrue from increased travel that may result from the fare reductions. What this increase in travel may be or what increase in revenue may result therefrom is largely a matter of conjecture.

Should such increase in travel result, it may well be accompanied by increased operating expenses, by reason of the increased train mileage that it may be necessary to operate. It may also, not improbably, require increased capital outlay in order to provide, either by purchase or car rental, the additional equipment required. This would necessitate additional expense for capital charges (interest, rental and amortization). The existing stock of passenger equipment of the New Haven is just about adequate to handle the present peak loads of passenger traffic.

B. & O. Welcomes Decision

W. B. Calloway, general passenger traffic manager of the Baltimore & Ohio, issued a statement in which he said that the B. & O. "welcomed the decision because it supports the Baltimore & Ohio policy and action taken during the past three years in endeavoring to bring about the reduction in the eastern territory." He also was gratified that "the basis of fares ordered by the Commission is the basis advocated by the Baltimore & Ohio."

He pointed out that the lower fares designated in the Commission's order, have been in effect for some time in the western and southern sections of the country, and that the railroads on which they apply have been practically unanimous in pointing to the wholesome effect that they have had on passenger revenues. Now that the fares, under the Commission's order, are to become effective throughout the entire country, Mr. Calloway feels that it will give an added stimulus to passenger business and encourage many people to use the railroads for their travel. He also feels that the new rates are sufficiently competitive with the cost of travel by private automobile, and by buses, to promise a return to some of the short haul business to the railroads, and he believes that the railroads will take advantage of the situation by putting more trains into operation, so that more frequent and better service can be offered to the traveling public.



One of the Zephyrs Emerging From a Drift at 80 Miles Per Hour

Blizzard Battle Wins Acclaim

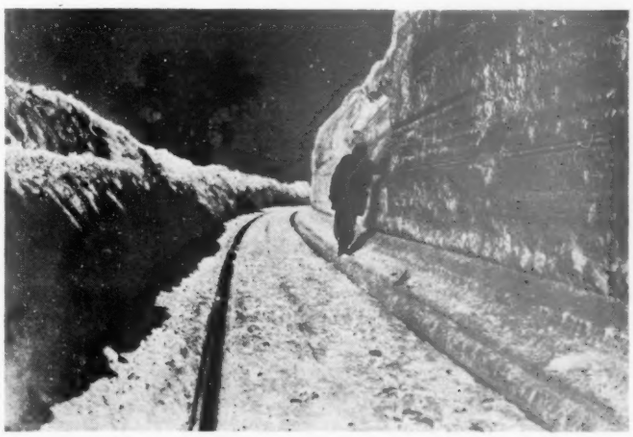
Increased traffic moved in spite of severest operating conditions experienced in 37 years

ISOLATED by snowdrifts for a month, forced to burn shade trees for fuel to survive subzero temperatures and faced with only three days' food supply, the 200 inhabitants of Hatfield, Mo., on February 15 fully realized the seriousness of not being on a railroad. This realization was not confined to Hatfield, however, for with blizzards paralyzing highway, airway and waterway traffic and cutting off food and fuel throughout the middle west during February, many communities which relied on highway transportation would have suffered equally severely if the railroads had not succeeded in getting their trains through.

The performance of the railroads during these record-breaking blizzards is a testimonial to their value to the country, for with other forms of transportation crippled the task of moving the nation's commerce was thrown solely upon them and they did not fail. Not only did the railways carry their own traffic and that of other forms of transportation but to this tonnage was added even more created by fuel and food shortage, which necessitated expedited service. Not only was traffic handled promptly under conditions which proved the acid test for railroad transportation, but outstanding gains were reported in the amount of business handled. During the four weeks from February 1 to 22, the railroads handled 2,461,995 carloads of freight or 138,873 carloads more than in the same period last year.

Special Services Rendered

Probably the most dramatic feature of the relation of the railroads to the country during these blizzards was the special service rendered by the railroads to relieve suffering and protect the comfort of persons in communities served by them. In many cities and towns where merchants had previously depended upon trucks for transportation and consequently did not carry stocks of any size and where prices, particularly coal prices, skyrocketed, great suffering and inconvenience were prevented by the railroads which rushed supplies to them. The mayor of Athelstan, Ia., on February 17 made an appeal for help, reporting there was no bread, sugar, flour, kerosene, lard or feed for livestock in the town which had been isolated since February 1 and that there was only one half a ton of coal in the town. Residents had been chopping down trees and small shacks for fuel. Relief finally came through a train which fought its way through the snow. At Des Moines, Ia., where fuel supplies were exhausted, whole families car-

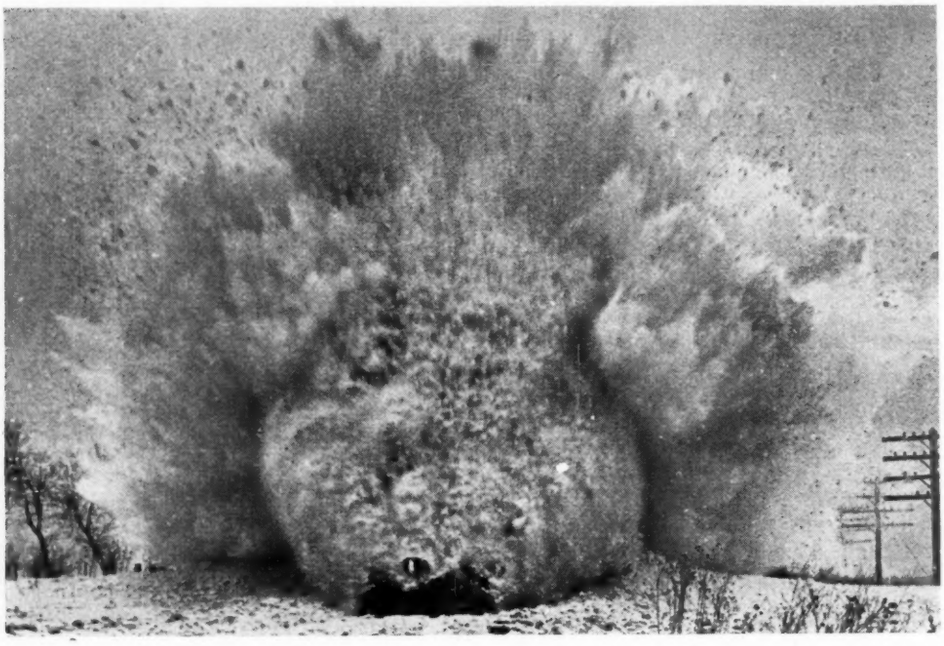


A Snow Plow Worked 18 Hr. on This Drift, Near Lawler, Iowa, Estimated to Be 25 Ft. High and 800 Ft. Long

ried their bedding to the court house and remained there until coal arrived by train.

Not only did communities suffer because of fuel shortages, but some experienced milk shortages as well. With highways blocked many cities, particularly the larger ones, felt the shortage and serious consequences were prevented only by extra efforts of the railroads to meet the situation.

Throughout the blizzards the railroads sought rather than avoided ways in which they could aid communities, volunteering their services publicly. Railroad coal was offered when supplies were exhausted and cars of coal were spotted at points most convenient to communities. Several railroads placed coal trains on express schedules to relieve or prevent shortages. Chicago, for example, received sufficient supplies to avoid depletion of its fuel reserves despite twice normal consumption. Urgent requests of shippers whose supplies of fuel and material were nearly exhausted were heeded by the railroads which made special efforts to deliver shipments.



One of the Twin Zephyrs Plowing Through a 5-Ft. Drift at 80 Miles Per Hour

Public Appreciative

That the public was not unappreciative of the efforts of the railroads to combat the blizzards is indicated by many editorials and stories appearing in the daily press, some of which follow:

From the Chicago Daily Drovers Journal, February 18.—"During the past month of unprecedented storm and cold, a good many people have had their eyes opened to their dependence on the railroads, and have not failed to observe and appreciate the heroic efforts made by railroad men to clear the tracks and move necessities. Men have worked for hours in sub-zero temperatures, facing winds that cut to the bone, in the almost hopeless task of shoveling "sugar" snow that is powdery and shifty and refuses to stay put. The people of the town that received a car of coal just as the local supply was exhausted do not need to be reminded of what they owe to the railroad men who, realizing their need, refused to quit when the wind threw the snow back in their faces and the frost bit deep. Passenger trains carried crews of shovelers. Even snowplows had to be dug out of the drifts by hard hand labor, and in some cases it was necessary to pass the snow from hand to hand up the sides of cuts. But the people must have coal; food must be moved to prevent starvation; animals en route must be given any protection possible so that they will not freeze to death; and finally the trains must move, for it is the tradition of the rails."

From the Chicago American, February 21.—"In the past few years the railroads have demonstrated that they can compete with automobiles, trucks and airplanes by adopting new ideas; streamline trains, door-to-door freight deliveries, etc.

"In the past six weeks—the toughest six weeks of winter weather in the history of the middle west—the railroads have demonstrated that they can compete successfully in another way—by being their sturdy, old-fashioned selves. Cross-country automobile and truck movements have been crippled most of the time since the cold spell began; now and then they have been halted altogether. Blizzards at times have grounded the airplanes. But the trains have kept shoving along, bucking the drifts, feeling their way through blinding storms, sometimes losing time, but getting there. They have carried thousands of passengers who ordinarily would have traveled by automobile. They have carried some who would have gone by air, although the airlines have done a heavy passenger business also, except when storms made it impossible for planes to leave the ground. But the truly great achievement of the railroads in the cold spell has been keeping the population fed and warm. Movements of foodstuffs, milk and fuel have been shifted almost entirely to the freight trains as boats became ice-bound and choked highways brought truck transport almost to a stop. Under the most difficult conditions imaginable, the railroads have taken up the added burden and borne it admirably."

From the Omaha World-Herald, February 11. (A letter to the editor.)—"The Coal Shortage in Iowa Crisis doubtless makes good newspaper copy, but such copy, without going into underlying causes, may ultimately do an injustice to the railroads and the surviving coal dealers of southwestern Iowa.

"This area once had a host of enterprising coal dealers, who carried many thousands of dollars' worth of coal in weatherproof bins to meet just such severe weather as we now have. Natural gas nibbled at the

business of these dealers in early fall and spring and open winters encouraged the delivery of coal by truck from wagon mines direct to the consumer to an extent that the potentially competent and responsible coal dealers of southwestern Iowa could no longer gamble with large investments of coal. When an emergency arises as it has done in the past week, it is quite natural that these dealers should not have had on hand stocks sufficient to supply the normal demand of their regular customers who use the better grades of higher priced coal and in addition supply the demand of those who had been and would be normally buying coal trucked from wagon mines to their homes at less than the dealers' cost.

"The railroads are not failing in service. If necessary, proof will be furnished of carload shipments moving into Omaha from 450 miles away in six days of 10-below weather. No "coal crisis" exists in any city or town in Nebraska at present, despite the fact that there is not even a wagon mine in the state."

From the Pittsburgh Sun-Telegraph, February 10.—"Were it not for the fact that railroads have been able to supplant ice-clogged rivers, Pittsburgh would be crippled industrially. The railroads have been moving 300 cars of coal a day to plants of the Carnegie-Illinois Steel Company and 150 cars a day to plants of the Jones and Laughlin Steel Corporation. Both organizations usually get their coal by river. Two and sometimes three locomotives to a train have been needed to get the coal through but the railroads have handled the unexpected job.

"Under unfavorable weather conditions the cost to railroads of moving the extra traffic has been high. But, of course, this extra cost is not passed on to shippers. This fact resulted in an angry call from a railroad man last week. He protested about a statement made by a coal dealer who blamed the rise in coal prices on increased transportation costs. There has been no recent change in railroad rates on coal. Any increase in transportation would be in trucking where bad road conditions are being encountered."

A better understanding of the battle waged by the railroads against the blizzards in February is gained by actual data. In several states snow was as much as 30 in. deep on the level, while strong winds blew it into drifts up to 24 ft. high. Subzero tempertures prevailed continuously and temperatures of 50 deg. below were recorded at Williston, N. D., and 56 deg. below at Battleford, Sask., on February 16.

To fight this drifting snow all snow fighting equipment, supplemented by extra motive power and hundreds of shovelers were forced into service. On the Illinois Central, the Chicago, Rock Island & Pacific, the Chicago, Burlington & Quincy, the Chicago, Milwaukee, St. Paul & Pacific and the Chicago & North Western, 200 wedge plows, 17 Russell plows, 14 rotary plows, 30 spreaders, 10 ditchers, and 50 flangers, some of which were propelled by as many as 4 locomotives, kept lines open to traffic. The board, lodging and labor cost for removing snow approximated $1,271,000 for these 5 roads alone in February.

A Deficit of £566,450, after interest and exchange charges, was reported by the Victorian (Australia) Government Railways for the year ended June 30, 1935. This reduction of £168,669 as compared with the 1933-34 deficit was due entirely to decreases of £114,349 in interest charges and of £54,319 in exchange costs on interest payments; 1934-35 operating revenue was £245,981 in excess of that for 1933-34, but this improvement was more than offset by the £259,699 increase in operating expenses.

Eastern Time Zone Extension Hearing

PROBABLY the most important question in the eastern time, zone extension case, hearings upon which were held before Commissioner Clyde B. Aitchison at Chicago, from February 24 to 28, is whether the ordinance passed by the city council of Chicago placing that city on eastern time effective March 1, will be permanent, according to testimony presented at the hearing. The council's action was under common law, there being no statutory law in Illinois governing time, and witnesses testified that following a resolution recently passed by the Illinois House of Representatives opposing eastern time for Chicago, a bill will be introduced at the next session of the state legislature in January, 1937, making eastern time for Chicago illegal. Testimony also revealed the fact that a petition now being circulated for signatures will force the Chicago board of elections to place the matter on the November ballot so that residents can vote on the continuance of eastern time.

The reopening of the Michigan time case of 1931 followed a request from the city of Chicago that the Interstate Commerce Commission require railroads operating in Chicago to use eastern standard time after March 1, and the desire of other communities to be heard on the question. In its hearing the commission endeavored to determine whether the limits of the eastern standard time zone should be moved westward to include Chicago or any of the remainder of the state of Illinois or any portion or all of the states of Michigan, Ohio, Indiana or Wisconsin.

The railroads were represented collectively by J. Carter Fort, general solicitor of the Association of American Railroads, and their one witness, J. M. Symes, vice-president of operation and maintenance of the association, testified for them, outlining the disadvantages that will accrue to the railroads and the city if the railroads should be forced to operate on eastern time at Chicago.

Part of Mr. Symes' testimony was designed to offset a proposal made by C. E. Elerick, traffic commissioner of the Grand Rapids Association of Commerce, that the western boundary of the eastern time zone be extended to a line running from Cincinnati, Ohio, to Indianapolis, Ind., and to Danville, Ill., by way of the Cleveland, Cincinnati, Chicago & St. Louis, then along the line of the Chicago & Eastern Illinois to St. Anne, Ill., thence to Kankakee, Ill., and Joliet, and to include the Chicago switching district as far north as Waukegan. Mr. Symes explained that while the railroads were opposed to moving the eastern time zone boundary, he was offering a simplified counterplan for the consideration of the commission, if it should decide to extend the zone, since the line proposed by Mr. Elerick did not take into consideration railroad operating requirements and divisions. Mr. Symes' alternate western boundary line circled Chicago on a 30-mile radius, thence through Momence, Watseka, Hoopeston and Danville, along the Indiana boundary to Clinton, thence to Terre Haute, Vincennes, Princeton and Evansville, and thence up the Ohio river to the present boundary, thus offering fewer exceptions than any other proposal. Even with this plan, Mr. Symes said, numerous western lines would operate mileages in eastern territory on central time and eastern lines would operate in western territory on eastern time.

The next location to which the western boundary could be moved satisfactorily, Mr. Symes said, is the Mississippi river, the boundary line extending from the Cana-

dian border along Lake Superior, westward around the Twin Cities, thence along the Mississippi river to Cairo and thence up the Ohio river. The exceptions along this line would be fewer but confusion would only be transferred to the Twin Cities and St. Louis. The next location would be Kansas City, and the same problems are presented in that territory. To eliminate confusion the line would have to be moved west to the mountain zone.

In describing the operating problems of the railroads in Chicago, he said that 500 freight trains with 15,000 loaded cars, 500 passenger and 1,000 commuter trains arrive at and depart from Chicago each day, while 1,000 yard crews and 5 belt lines, 15,517 miles of tracks and 160 yards are employed to handle this traffic. The joint arrangements in no other city are as complex as the 800 in Chicago, which embrace 150 joint arrangements where one railroad uses the tracks of another and 100 interlocking plants. With eastern time in Chicago, eastern and western crews will be operating on the same tracks. At passenger stations where both eastern and central time will be in effect, the situation will be as confusing as at Cincinnati.

In order to give the same service if Chicago goes on eastern time, he continued, trains must arrive earlier at Chicago, thus necessitating earlier departures or faster schedules. Since they cannot depart earlier and most schedules cannot be speeded up as much as 1 hr., it will be necessary to operate more train miles. For example, the Chicago, Milwaukee, St. Paul & Pacific mail train No. 56, which leaves the Twin Cities at 8 p. m. and arrives in Chicago at 6:30 a. m., cannot depart before mail is ready and cannot arrive later or it will miss the desirable first morning delivery in Chicago. To meet the situation another train would have to be operated, with an increase of 300,000 train miles.

On the Illinois Central, a train from Alabama and Tennessee now connects and is consolidated with one from Florida at Mattoon, Ill. After consolidation it arrives in Chicago at 1 a. m., the latest time possible to permit delivery of produce in Chicago for the merchants. To meet the market requirements under eastern standard time it would be necessary to operate two trains with 100,000 additional train-miles a year. Likewise, on the Chicago, Rock Island & Pacific, a train from the southwest is consolidated with one from the northwest and arrives in Chicago at 12.30 a. m., the latest possible arriving time. That consolidated train would have to be split into two trains, which would mean 120,000 additional train-miles a year.

Because trains will leave earlier and arrive later, much eastbound traffic will be diverted to the St. Louis gateway. L.c.l. business from St. Louis, where stations close at 6 p. m., would be diverted to trucks for St. Louis is so close to Chicago that it is impossible to take an hour out of the running time. If the railroads are forced to adopt eastern time, the resulting changes in operating practices will cost them $15,000,000 to $20,000,000 a year, he said.

Because of the complicated problems described by Mr. Symes, F. J. Noonan, consulting engineer on railway construction for the city council took the stand on rebuttal and introduced a study made in 1921 for the consolidation of terminals whereby the outer belt forms the boundary of a jointly-owned and operated terminal for Chicago. It developed that this plan would cost the railroads $46,000,000 and would require five years for completion, whereas, the Boatner plan would cost very little and be operative in one year.

No oral arguments will be heard. Briefs will be filed by March 31 and answers by April 21, after which the commission will take the case under advisement.

Hearings on Continuance of Ex Parte 115 Increases

WASHINGTON, D. C.

THERE is no escape from the necessity of continuing the present Ex Parte 115 emergency freight charges on certain commodities if the credit of the railroads is to be strengthened and needed supplies of capital secured, R. V. Fletcher, general counsel of the Association of American Railroads, said on March 4 at the beginning of hearings before the Interstate Commerce Commission on the application of the railroads to have continued these freight charges which the commission authorized in March, 1935. In allowing these charges the Commission limited them to the balance of 1935 and the first six months of 1936. Mr. Fletcher's preliminary statement was followed by the testimony of Dr. Julius H. Parmelee, director of the Bureau of Railway Economics, A. A. R.

"The railroads of this country," said Mr. Fletcher, "are still in desperate need of revenue and the emergency charges should be continued indefinitely. But for these emergency increases the year 1935 would have been disastrous for the rail carriers of this nation. Class I railroads, during the past calendar year, failed to earn their interest and fixed charges by $287,539, even though the emergency charges in the eight months they were in effect in 1935 yielded $73,771,000 in revenue. On an annual basis, the revenue from these emergency rates is estimated to amount to about $104,500,000.

"The railroads are face to face with an increase in the cost of operation which must be met in some manner. Due to increased prices, the cost of materials used by the railroads in 1935 was approximately $94,000,000 greater than in the preceding year. Without including the cost of the social security act and the railway pension acts, the wage bill of the carriers in 1935 exceeded 1934 by nearly $124,000,000 in the face of the fact that the first three months of 1935 did not feel the full force of the wage increase brought about by the restoration of the 10 per cent wage deduction which was made in 1932. Gross operating revenues of the Class I railroads, during the past year were nearly $179,000,000 above those for 1934, yet the increases in labor and material costs were such that there was an increase of only $37,500,000 in the net railway operating income of the carriers. With no reductions in expenses in sight and facing the possibility of pension and social security payments aggregating $65,000,000 in 1936 and larger amounts for later years, the railroads can see no escape from the necessity of continuing the emergency freight charges if their credit is to be strengthened and needed supplies of capital secured."

Mr. Fletcher said that the emergency charges have not diverted traffic from the railroads in appreciable quantities. He added that these charges have been productive of badly needed revenues which to the railroads are indispensable. He also called attention to the constantly increasing efficiency record of the railroads which has included the speeding up of both freight and passenger train service, the decrease in fuel consumed per thousand gross ton miles, and other factors relied upon by the carriers as tests of efficient and economical operation.

Mr. Fletcher said that there have been comparatively few complaints from the shipping public against the payment of the emergency rates. Most of the complaints received, he said, have been directed against inequalities in the rates on competing articles. When these complaints

have been found to be well grounded, corrections have been made.

Dr. Parmelee asserted that "Even a continuation of these rates will fail by approximately $155,000,000 to meet the increased costs of operation but they will aid in defraying the heavier costs at a time when the railroads need all revenues which they can get." He explained that because of the increase in the cost of fuel and materials, which he estimated at approximately $100,000,000 annually, and the restoration of the wage deduction for employees which amounts to $160,000,000 a year, operating expenses of the railroads have been increased by $260,000,000 annually. On the other hand, the amount derived annually from the emergency freight charges on certain commodities amounts to $104,500,000 annually which leaves $150,000,000 that must be made up from other sources.

"Class I railroads," continued Dr. Parmelee, "have shown some improvement in their financial condition in the past year due to an upturn in freight traffic but even in the face of that fact they have ended the past four years with a deficit after fixed charges have been paid. In 1935, such deficit amounted to $287,538 which would have been considerably greater had the commission not granted in 1935 the emergency freight rates under Ex Parte 115. The deficit amounted to $16,887,078 in 1934; $5,862,836 in 1933 and $139,203,821 in 1932."

The rate of return on property investment of the Class I railroads in 1935, Dr. Parmelee said, was only 1.93 per cent compared with 1.78 per cent in 1934 and 1.81 per cent in 1933. He added that loans made to the Class I railroads by the Reconstruction Finance Corporation and the Public Works Administration and outstanding on December 31, 1935, totaled $575,939,317. Of that amount, outstanding loans by the Reconstruction Finance Corporation total $387,750,317; and those of the Public Works Administration, $188,189,000. Of the total loans made by those two governmental agencies to Class I railroads, $91,050,963 had been repaid by that date.

In connection with his testimony, Dr. Parmelee filed with the commission an exhibit which showed that gross expenditures for additions and betterments to railway property in 1935 was far below those of the years prior to the business depression, owing to the financial conditions of the carriers. Such expenditures, according to Dr. Parmelee, amounted only to $188,302,000 in 1935, which was less than in the preceding year, and was nearly $700,000,000 less than in either 1929 or 1930.

Testimony of C. E. Denney, president of the Erie, the second witness, followed the general lines of Dr. Parmelee's. "It is not possible," he said, "for me to say the extent to which maintenance of way expenses should be increased this year but I can say without reservation that an increase in expenditures will be made for maintenance if better earnings make dollars available."

THE COMMONWEALTH RAILWAYS OF AUSTRALIA reported, for the year ended June 30, 1935, a deficit after interest charges of £472,394 as compared with a 1933-34 deficit of £487,949. Only two of the four lines comprising the Commonwealth system—the Trans-Australian and the Federal Territory—reported a 1934-35 net from operations; and in the case of the former a £151,700 expenditure for tie renewals did not enter the operating expenses, having been provided by a special appropriation from the Commonwealth treasury. The reduced deficit as compared with the previous year was due to a reduction of £3,325 in interest charges, and £15,730 increase in gross revenue which was accompanied by a rise of only £3,500 in operating expenses, i. e. exclusive of the above-mentioned £151,700 tie-renewal outlay arranged for outside the railway accounts.

Odds and Ends . . .

Passenger Terminal Activity

In connection with the handling of passenger trains into passenger terminals on a grand scale, George Flatow, publicity agent for the Pennsylvania, calls attention to the fact that, on September 3, 1935, 57 trains entered the Pennsylvania station in New York in the 58 minutes between 7:02 a.m. and 8 a.m., and that, on January 6, 1936, the same station handled 50 trains in 58 minutes.

Joy Ride

A locomotive and six empty passenger cars were sent upon a brief, wild run in Baltimore, Md., recently, by a man who suddenly boarded the engine, slugged the engineman and jerked the throttle wide open. The heavy locomotive and the six cars ran off the end of the track at the Hillen station of the Western Maryland, plunged through a gate and plowed into a shed at the rear of the station. As the roof of the shed tumbled down about the locomotive, railroad employees rushed to the cabin to catch the man. It took eight men to subdue him. Later, 10 officers were required to quiet him at a police station. The identity of the man was not determined.

Stentorian Brakeman Doomed

Railroads seem to have gone in for the abatement of the noise nuisance with a vengeance. Along with the introduction of noiseless locomotives, axles with quiet roller bearings and air-conditioned coaches whose windows are sealed to keep out sound as well as dust, comes word that the Milwaukee has introduced the muted trainman. An order recently issued forbids announcing stations in coaches at night. Instead, conductors and brakemen must tiptoe through the cars and whisper gently to passengers nearing their destination that it's time to get off and to "please remember your parcels." The traveling public will probably miss the sonorous shouts, even though they didn't always understand the announcements.

A Hundred Years Ago

The following is an excerpt from a letter written on July 22, 1835:

This morning at 9 o'clock I took passage in a railroad car from Boston, Mass., to Providence, R. I. Five or six other cars were attached to the locomotive, and uglier boxes I do not wish to travel in. They were made to stow away some 30 human beings who sit cheek by jowl as best they can. By and by just 12—only 12—bouncing factory girls were introduced who were going to a party of pleasure to Newport. "Make room for the ladies!" bawled out the superintendent. "Come, gentlemen, jump up on the top, plenty of room up there." The rich and the poor, the educated and the ignorant, the polite and the vulgar, all herd together in this modern improvement in traveling, master and servant, sit in each other's laps, as it were, in these cars, and all this for the sake of doing very uncomfortably in two days what would be done delightfully in 8 or 10.

Longevity

TO THE EDITOR:

NEW YORK, N. Y.

On page 225, February 1, I noticed that the Pullman Company challenges any railroad to beat its record for passenger department longevity. As against this, I offer the following for account of the Central of New Jersey:

H. P. Baldwin, general ticket agent and general passenger agent, 1863 to June 1, 1901;

C. M. Burt, general passenger agent, June 1, 1901 to September 1, 1906;

W. C. Hope, general passenger agent and passenger traffic manager, September 1, 1906 to January 1, 1929;

W. V. Shipley, passenger traffic manager appointed January 1, 1929, and still serving.

W. G. BESLER,
Chairman of the Board, Central of New Jersey.

Editor's Note—This is an average tenure of office of 18 years, and must be close to a record.

Communications . . .

Speed of "Death Valley Scotty's" Famous Train—the "Coyote Special"

BALTIMORE, MD.

TO THE EDITOR:

During recent times much has been written and said regarding the increasing speeds of passenger trains as they are being made more responsive to the demands of the traveling public. It has been truly contended and effectually proven that not only the modern Diesel-powered and electrified equipment is capable of marked speed performance but steam power, also, has the inherent ability successfully to measure performance with its distinguished competitors; not only recently but in earlier years.

Of the several historic speed records established by steam locomotives probably the one most talked of and written about was the performance of the "Coyote Special" of the Santa Fe and its colorful sponsor, Walter ("Death Valley") Scott. In earlier years, when night yardmaster for the Atchison, Topeka & Santa Fe at Barstow on the Arizona division, the undersigned personally knew Walter Scott and the train and engine crew who operated Scott's special, Los Angeles to Needles, on the start of its notable run to Chicago.

George Simpson, now superintendent at Fresno, was the conductor and John Finlay the engineer, out of Los Angeles. Charles E. Van Loan, the noted author of later years, then a newspaper reporter, was a passenger on the train, writing the story for the press associations.

Previous to operation of the special, Scott had several times discussed with the Santa Fe passenger traffic department in Los Angeles the possibility of running the train. There was some doubt in the minds of the traffic personnel as to the validity of Scott's plans. He soon removed their misgivings, however, by coming into the office unexpectedly and tendering John J. Byrne, assistant passenger traffic manager, now deceased, $5,500 in cash, stating he would expect them to make the run, Los Angeles to Chicago, in 46 hr. Mr. Byrne, astonished, replied that figure was 11 hr. and 56 min. faster than the eastbound run had ever been made. Mr. Byrne, however, promised to make the time. This understanding was at noon, Saturday, July 8, 1905.

At 1 p. m., Sunday, July 9, the "Coyote Special," locomotive 442, baggage car 210, dining car 1407, and standard Pullman sleeper Muskegon, departed La Grande station, Los Angeles. At 11:54 a. m., July 11, it stopped in the Dearborn Street station, Chicago, having made the run of 2,265 mi., via Needles, Albuquerque, La Junta, and Kansas City, in 44 hr. 54 min. The fastest previous run between these points was made by the H. P. Lowe Special, westbound in August, 1903, with baggage and Pullman car, in 52 hr. 49 min. The fastest previous eastbound run had been made by the Peacock Special in March, 1900, via the same route, 57 hr. 56 min., with Pullman sleeper and buffet smoker. The operation of Scott's special train and his subsequent liberal spending of money on Broadway, New York, was the subject of much comment in the public press and in conversation.

Some of the figures for fast time made by the train are: Pasadena to Olivewood, 84 m.p.h.; Speareville to Offerle (Kan.), 85.5 m.p.h.; Norborne to Carrollton (Mo.), 90 m.p.h.; Cameron to Surrey (Ill.), 106.1 m.p.h. Relatively high speed was also made in crossing the Continental Divide in Arizona and New Mexico.

Subsequent to operation of the train there was speculation to the effect that it had been an advertising feature prompted by the Santa Fe. This supposition was not founded upon fact. Scott was his own monitor and produced his money from personal funds. This was not doubted by any responsible Santa Fe man with whom I talked regarding the special.

Scott in his younger prospecting days was, and probably still is, regarded the man best acquainted with the secret and far reaches of the Old Woman Mountains, the Grapevine, the Panamint and the Funeral ranges.

Much of colorful interest could be written about Scott—"Death Valley Scotty"—as he has long been familiar in the public prints. During those earlier years, as I observed Scott in the old time Harvey House and about the station reservation in Barstow, he was reserved in manner; reticent in speech; impressed one as being a man who well knew how to keep his own counsel, and as being crafty in action.

I have in my possession the records of notable special trains but the peer, apparently in the public view, during the latter years of the nineteenth century and the early years of the twentieth was none other than the Santa Fe's "Coyote Special" sponsored by the legendary Scott of Death Valley fame.

EDWIN SWERGAL.

What of the Track?

CHICAGO.

TO THE EDITOR:

The article entitled "What of the Track?" in the *Railway Age* for November 30, 1935, interests me in that it announces that the modern track must be strong. It is disappointing, however, that the writer of the article dismisses as unprofitable the idea that there may be something lacking in the present track design.

If railway track must be stronger, it ought to be worth while to inquire about engineering means to meet this demand. Heavier rails, more tie plates, joint bars, anti-creepers, clean ballast of "sufficient depth" and "adequate drainage" are the only factors of track strength discussed. How they contribute to strength individually has not been and probably will not be determined in such a way as to permit quantitative use in an engineering design. Research by Dr. Talbot and others has disclosed much relative information about these factors, but it has also disclosed the logical error committed by many of the "practical" attempts to strengthen track.

Heavier rails do not strengthen track foundations. They have some load-distributing value, but application of the simple laws of moments and stresses to a railroad rail will show how limited this distribution must be. Tie plates do not contribute to basic track strength. They are a detail functioning to distribute the load locally within the track assembly and to assist in maintaining gage. Joint bars are a detail—palliative, at best. They contribute nothing to the strength of the track, except at joints, and are required because of an important defect that is *not* unavoidable. Anti-creepers are a detail made necessary by functional failure of another detail—the rail-to-tie fastener.

Clean ballast of "sufficient depth" begs the question entirely. What is "sufficient depth"? Federal valuation of the railroads disclosed miles and miles of track with ballast more than five feet deep. "Sufficient depth"! Where? For what condition of roadbed? By what principle of mechanics does loose ballast become an engineering foundation structure?

"Adequate drainage," while more understandable than "sufficient depth," nevertheless dodges the issue. There are plenty of places where there can be no such thing as adequate drainage. More generally, one may ask, adequate for what? To make earth hard enough under all degrees of wetness from rains to resist penetration of loose ballast into it? Or, perhaps what is meant is that it allows the maintenance forces to keep up with its continuous process of functional failure. The extent to which that failure may be allowed to go before palliative maintenance work must be done has been cut down by the exactions of high speed.

Railway track is the enigma of engineering. Device has been piled upon device to cure the inadequacy of some other device or some basic defect. Rail joint after rail joint has been developed to make a continuous rail and at the same time make it discontinuous. Rail fastening after rail fastening has been proposed with the avowed purpose of stabilizing track by fastening the rail to something which itself is not properly supported. The use of higher and heavier rails to provide greater track stability, entailing larger and larger expenditures, begins and ends at the *top* of the structure!

If the speed and weight of trains are to increase, as seems likely, the circular path of maintenance will be beaten harder and harder unless, perchance, there *is* more discussion (contrary to an introductory conclusion in the article, which prompts this letter) of track design.

A. C. IRWIN,
Manager, Railways Bureau, Portland Cement Association.

NEWS

Bill Would Create New Labor-Protection Set-Up

Wheeler-Crosser proposal designed as substitute for provision of co-ordinator law

A bill designed to continue under new auspices, and as a permanent feature of railway regulation, labor-protection provisions, such as those of the Emergency Transportation Act, was introduced in the Senate and House of Representatives on March 4 by Senator Wheeler of Montana and Representative Crosser of Ohio. The Railway Labor Executives Association has recently been conferring with a committee of railway managements in an endeavor to agree on some voluntary plan for the protection of employees displaced by consolidation projects.

The Wheeler-Crosser proposal would cover every company directly or indirectly controlled by the railroads. The interests of the men who might be displaced as a result of mergers would be protected by a special adjustment board comprising an equal number of management and union representatives, with a member of the Interstate Commerce Commission as chairman.

Under the bill the Interstate Commerce Commission would be required to investigate any plan for reducing competition between carriers or for reducing the amount of public service rendered by the carrier. Before any carrier could effect a merger or consolidation or enter into any arrangement for pooling traffic or abandoning facilities it would apply to the commission for permission. In setting forth its petition the carrier would state the savings to be effected, the number of employees to be laid off and the public service that would be curtailed. The adjustment board would be empowered to make the necessary investigation when a petition for merger or consolidation or other changes was filed.

Conditions to which a railroad would be subjected before a merger could be approved include relocation (with moving costs paid) of an employee displaced by consolidation under conditions no less favorable than prior to consolidation, or continuance of at least two-thirds of an employee's compensation until a comparable position is found for him; and option to the employee of taking fair and just dismissal compensation equal to at least a year's pay, or an adequate pension for those eligible for retirement under any applicable provision for the payment of such pension.

In determining whether mergers or other proposed railway changes were in the public interest, the I. C. C. would be authorized to apply standards including the following:

"That it is in the public interest to maintain available for public service all the facilities which can be reasonably utilized by economical and efficient management in the rendition of public service, and which will provide for the maintenance of adequate competition between carriers or with other forms of transportation service to retain for the public the normal benefits of competition, between enterprises under separate ownership and control.

"That it is in the public interest to require the maintenance of just and reasonable employment relations and security of employment and of livelihood for the employees of carriers subject to this act."

A. C. L. Employees Intervene Against Pension Act

In the suit of the railroads for an injunction against the Railroad Retirement Board to forbid enforcement of the Railroad Retirement Act, now pending in the Supreme Court of the District of Columbia, 16 employees of the Atlantic Coast Line have intervened in support of the plea for an injunction.

These employees in their petition assert that they speak on behalf of 2,000 employees of the A.C.L. against the "unconstitutional enactment." They state that, without the retirement act, they will in time benefit from the voluntary pension plan maintained by the company without any contribution of their own whereas, under the retirement act, they will be forced to pay "a so-called income tax" of 3.5 per cent a month.

New Equipment on Order

Class I railroads on February 1 had 11,365 new freight cars on order, according to the Association of American Railroads. New freight cars on order on February 1, 1935, totaled 818, while in 1934 there were 732.

New steam locomotives on order on February 1 this year totaled five, the same as on February 1, 1935, and new electric locomotives totaled 13 compared with 80 last year.

New freight cars installed in January totaled 1,158 compared with 216 in the same month last year. One new steam locomotive was installed in January compared with five in the same month in 1935, no new electric locomotives were placed in service in January, 1936, but in January last year there were 10. Freight cars and locomotives leased or otherwise acquired are not included in these figures.

P.R.R. Trucking Affiliate Seeks Storedoor Permit

Scott Brothers application arouses much interest at joint board hearing in New York

Representatives of New York and New Jersey, comprising Joint Board No. 3, created by the Interstate Commerce Commission under the Motor Carrier Act, held a hearing in New York on March 2 on the application of Scott Brothers, Inc., of Philadelphia, Pa., trucking affiliate of the Pennsylvania, for permission to operate as a contract carrier in collection and delivery service for that road and the Long Island in the New York metropolitan area. While the proposal was opposed vigorously by representatives of New York trucking interests, many of those attending the hearing were less concerned with the fate of the application than with the legal questions which it raised.

In this latter connection it was suggested that the application was unnecessary under that section of the Motor Carrier Act which exempts from regulation motor vehicles operating within the commercial zone of a municipality. Opposed to this, however, was the question as to whether or not the intra-terminal operation proposed fell within that provision of the same section which brings within the scope of the commission's regulatory authority such local trucking when it is "under a common control, management, or arrangement for a continuous carriage or shipment to or from a point without such municipality, municipalities, or zone." Then, if the latter provision applies, there was some speculation as to whether the application of Scott Brothers might have to be one for a certificate as a common carrier, participating in the railroad's storedooor delivery tariffs.

The testimony on behalf of the applicant was opened by George G. Young, general superintendent of Scott Brothers, Inc., who was followed by three representatives of the Pennsylvania—P. J. Mooney, traveling auditor; R. J. Littlefield, supervisor of motor service; and Ralph B. Burke, supervisor of stations and transfers, New York Zone. Mr. Young testified that Scott Brothers is capable of performing the storedoor pick-up and delivery in the New York area where it has for some time been doing inter-station trucking for the Pennsylvania. It has available for the new assignment 50 pieces of equipment. The Pennsylvania now has six contract truckers performing its New York storedoor services, and Fred O. Nelson, Jr., counsel for

the Merchant Truckmen's Bureau of New York, endeavored to draw from Mr. Young an admission that a granting of the application to Scott Brothers would result in a cancellation of contracts held by truckmen now performing the work. Mr. Young, however, as well as subsequent witnesses for the applicant, stated that no decision in this connection has yet been reached.

Mr. Mooney presented statements designed to show the financial responsibility of Scott Brothers, and Mr. Nelson endeavored to draw from this witness detailed information about the holdings of the American Contract & Trust Company, P.R.R. affiliate. Mr. Mooney stated that the American Contract & Trust Company, which is wholly owned by the Pennsylvania, owns 80 per cent of the voting stock of Scott Brothers, Inc. He was only familiar in a general way with other holdings of American Contract & Trust.

Mr. Littlefield sketched briefly the Pennsylvania's interest in bus and trucking companies. It has, he said, a 50 per cent interest in the Pennsylvania Greyhound Lines, operating 300 vehicles in long-haul passenger service; through the American Contract & Trust Company, it has investments in 19 trucking companies operating 1,700 units of equipment primarily in local service. Also, it uses in its collection and delivery service approximately 1,000 trucks operated by contractors. The Pennsylvania, Mr. Littlefield continued, would make a contract with Scott Brothers if the latter's application is granted. The road feels that to perform collection and delivery services, especially after the expansion anticipated when the April 1 tariffs become effective, it should have its own affiliate in the field. In response to Mr. Nelson's questioning, Mr. Littlefield said that the extent to which Scott Brothers will handle the services in the New York area is not known at this time.

Mr. Burke discussed the handling of c. & d. freight in New York, but like the previous witnesses would say nothing concerning the fate of present contracts, excepting that all have a 30-day cancellation clause and that no notice had yet been served either by the Pennsylvania or by any of the contractors. Asked by Mr. Nelson if there had been any difficulty with present contractors, Mr. Burke said that performance had been fair, although there had been a number of complaints on delays. There had been no difficulty, he admitted, in getting bids from local truckers but he added that when called upon to perform service some who agreed to enter contracts did not care to carry them out. Here objection to Mr. Nelson's attempt to go into the rate paid under present contracts was sustained.

The foregoing testimony on behalf of the applicant was followed by brief presentations in opposition, offered through representatives of the Merchant Truckmen's Bureau of New York, New York State Motor Truck Association, Inc., and individual local truckmen. These witnesses in general contended that there is at present a surplus of trucking in the area involved and a granting of the application would only serve further to demoralize the industry. Mr. Nelson, on behalf of his organization, stated that it is the intention to ask the Interstate Commerce Commission for a suspension and general investigation of the storedoor tariffs filed by eastern roads, to become effective on April 1. Present tariffs of the Pennsylvania and the Erie, he said, have been a disturbing influence and the proposed extention will have further adverse effects. Also, Mr. Nelson contended that Scott Brothers' application is premature in that the Pennsylvania has not been authorized under Section 213(a) of the Motor Carrier Act, to acquire the control of Scott Brothers, which the record shows it to have through the American Contract & Trust Company.

The joint board, consisting of Thomas L. Hanson, a member of the Board of Public Utility Commissioners of New Jersey, and M. C. Cleveland, chief engineer of the New York Public Service Commission, allowed counsel 30 days in which to file briefs. H. Z. Maxwell, assistant general counsel of the Pennsylvania, appeared as counsel for Scott Brothers.

Accident Near Revelstoke, B. C.

A locomotive tender being drawn by a wrecking crane away from a train stalled in a slide east of Revelstoke, B. C., on the Canadian Pacific on March 2, broke its cable and crashed into the stalled train, killing 15 men, most of them maintenance of way employees.

Eastman Terminal Orders Expected About March 31

Following conferences with regional committees representing the railroad labor organizations, Co-ordinator Eastman has arranged to withhold at least until March 31 his proposed orders requiring railway terminal unification in 11 cities. The labor committees asked for more time in which to prepare protests.

Motive Power for High Speed—A Correction

In the article "Motive Power for High-Speed Operation," published in the February 22 issue of *Railway Age*, relations between speed and horsepower were shown in a diagram at the upper right-hand corner of page 313. The vertical co-ordinate, showing horsepower and reading from zero to 120,000, should have read zero to 12,000.

Delivery of I. C. Streamlined Train

Delivery of the Diesel-electric streamlined train which the Pullman-Standard Car Manufacturing Company is constructing for the Illinois Central is scheduled for the middle of March. The train will be exhibited before being placed in service at a date and on a schedule to be determined after tests are made. It will make a round trip daily between Chicago and St. Louis, replacing two standard trains.

Trans-Missouri-Kansas Board Meeting

The 14th annual and the 44th regular meeting of the Trans-Missouri Shippers Board will be held at Kansas City, Mo., on March 11. The program provides for the election of officers, and a discussion of highway transportation and pick-up and delivery service. At a joint luncheon of the Board and the Kansas City Traffic Club, Carl R. Gray, president of the Union Pacific will be the speaker.

A. R. E. A. Luncheon

Supplementing the program for the annual convention of the American Railway Engineering Association which is to be held at the Palmer House, Chicago, on March 10-12, as published in the *Railway Age* of February 29, page 371, Ralph Budd, president of the Chicago, Burlington & Quincy, will address the association at its annual luncheon on Wednesday, March 11. Mr. Budd will speak on current railway problems as related to engineering.

Aitchison Guest of Traffic Club for Anniversary

Clyde B. Aitchison, Interstate Commerce Commissioner, was the guest at a luncheon of the Traffic Club of Chicago on February 25, the luncheon being in commemoration of his twenty-ninth anniversary of service in public transportation regulatory work. He has been on the federal commission since 1917 and his appointment for another seven-year term has just been confirmed by the senate. Prior to that he served 10 years on the Oregon public service commission. In a brief address, Mr. Aitchison declared that his experience has taught him that theoretical philosophies and economics fail to meet the big problems of transportation regulation. Problems must be met as practicalities and dealt with one by one as they arise.

Lower B. C. Rates Voted Down

British Columbia members of Parliament clashed in Ottawa last week on the question of freight rates on grain moving from the Prairie provinces to the Pacific coast, as Thomas Reid's bill to reduce rates on domestic shipments to the export level was voted down in the House of Commons.

Mr. Reid, Liberal B. C. member, argued with Harry Barber (a Conservative from the same province), as to who had done most to obtain lower freight rates, and agreed to withraw his bill at the suggestion of Minister of Railways Howe.

Mr. Barber, however, objected, and as a member must have the unanimous consent of the House to withdraw a bill, the vote had to be taken. The question was before the Governor-in-Council by way of appeal from the Board of Railway Commissioners, the Minister of Railways explained. He assured Mr. Reid a decision would be given at the earliest possible moment, and asked for withdrawal of the bill.

Club Meetings

James G. Lyne, financial editor of *Railway Age*, was the speaker at the monthly meeting of the Traffic Club of Newark, N. J., which was held on March 2 at the Chamber of Commerce auditorium in that city. Mr. Lyne took as his subject "How British Railways Merchandise Their Freight and Passenger Services."

Thomas E. Riley, district manager, Export Steamship Company, was elected

Continued on next left-hand page

president of the Traffic Club of Baltimore, Md., at the annual meeting held at the club's headquarters in the Lord Baltimore Hotel in that city on March 3. Other officers elected are: First vice-president, George E. C. Garrett, passenger representative, Pennsylvania; second vice-president, Louis J. Zinser, general freight agent, W. T. Cowan Motor Freight Line; third vice-president, George W. Kraus, district freight agent, American Sugar Refining Company; secretary, C. F. Johnston, assistant secretary-treasurer, Locke Insulator Company; treasurer, John B. Wilkes, freight representative, Baltimore & Ohio.

The Central Railway Club of Buffalo (N. Y.) will hold its next meeting at Hotel Statler, Buffalo, on Thursday evening, March 12. Dean Charles Lee Raper, of the College of Business Administration, Syracuse University, will present a paper on the Motor Carrier Act and federal regulation of motor transportation.

N. Y. Railroad "Fans" Plan Events

Movies of one of the most spectacular railroad runs ever made—that of the Burlington Zephyr from Denver to Chicago in 13 hrs., 5 min., at an average speed of 77.5 miles per hour—will be the feature of the March 27 meeting of the New York Division of Railroad Enthusiasts, Inc. Other movies of the Burlington will also be shown at this meeting, which is to be held in Room 2946, Grand Central Terminal. Guests are welcome. An Erie officer is also expected to speak.

The popular trip to the New York Central's terminal at Harmon, N. Y., made by this group last spring, the first "organized" expedition of rail "fans" in the New York district, is to be repeated on April 4 as a result of arrangements made by the New York Central with the Railroad Enthusiasts. The party will leave New York probably on the North Shore Limited spending the afternoon at Harmon inspecting electric and steam locomotives, with opportunities for photography. The round-trip fare will be $1. Non-members wishing to make the trip may send reservations to Edward May, Secretary, 170-16 Highland Avenue, Jamaica, Long Island. In the event of inclement weather a postponement to April 18 will be made.

Long Distance Trucking a Threat to Country Towns

The Farmers' Elevator Association of Minnesota, at its annual convention in Minneapolis on February 20, unanimously adopted a resolution approving the principles embodied in proposed legislation governing trucks and pledging its support to the program. The business of operating country elevators cannot be conducted without railroad transportation, and trucking results in the destruction of long established channels of trade and the processes of orderly marketing.

The legislative program will (1) prohibit the use of the public highways for the transportation of abnormally heavy loads except for comparatively short distances; (2) require the large trucks employed in long distance transportation to pay for their use of the public highways on a basis that is approximately proportionate to the taxes imposed on other classes of motor vehicles, and with the ton-mile of highway use as the unit of measure; (3) require these trucks to pay actual taxes for the support of state and local governments comparable to those levied against the railroads; (4) oppose any legislation that will add to the costs of the railroads, impair their efficiency, or tend to increase railroad rates; (5) regulate all trucks employed in peddling, except those owned by farmers, to the extent of requiring them to comply with the same provisions governing liability insurance and effecting safety, etc., as are now imposed on the regulated highway carriers; (6) require any trucker who buys grain, hay, livestock or other produce from farmers for re-sale to comply with the laws governing wholesale produce dealers, including licenses and bonds to guarantee payment to the farmers; and (7) to place the handling of grain by truck for compensation under the same regulations with respect to inspection, grading, weighing, etc., as when hauled by railroads.

Meetings & Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION.—T. L. Burton, Room 3400 Empire State Bldg., New York, N. Y.

ALLIED RAILWAY SUPPLY ASSOCIATION.—F. W. Venton, Crane Company, 836 S. Michigan Ave., Chicago, Ill. To meet with Air Brake Association, Car Department Officers' Association, International Railroad Master Blacksmith's Association, International Railway Fuel Association, International Railway General Foremen's Association, Master Boiler Makers' Association and the Traveling Engineers' Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—W. R. Curtis, F. T. R., M. & O R. R., Chicago, Ill.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 816 McCormick Bldg., Chicago, Ill. Annual meeting, October 27-29, 1936, New Orleans, La.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York, N. Y.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—F. O. Whiteman, Union Station, St. Louis, Mo. Annual meeting, June 16-18, 1936, Hotel Stevens, Chicago, Ill.

AMERICAN ASSOCIATION OF RAILWAY ADVERTISING AGENTS.—E. A. Abbott, Poole Bros., Inc., 85 W. Harrison St., Chicago, Ill.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—F. R. Borger, C. I. & L. Ry., 836 S. Federal St., Chicago, Ill. Annual meeting, October 5-8, 1936, Toronto, Ontario.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, 319 N. Waller Ave., Chicago, Ill. Annual meeting, 1936, Chicago, Ill. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY CAR INSTITUTE.—W. C. Tabbert, 19 Rector St., New York, N. Y.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—R. G. Buford, Asst. Mgr., Industrial Development Dept., M-K-T R. R., Dallas, Tex.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the Association of American Railroads, Division IV.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 10-12, 1936, Palmer House, Chicago, Ill.

AMERICAN RAILWAY MAGAZINE EDITORS' ASSOCIATION.—M. Fenaja, Missouri Pacific Lines Magazine, Missouri Pacific Lines Bldg., St. Louis, Mo.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M. St. P. & P. R. R., 11402 Calumet Ave., Chicago, Ill.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—R. E. Schindler, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—C. E. Davies, 29 W. 39th St., New York, N. Y.

Railroad Division.—Marion B. Richardson, 192 E. Cedar St., Livingston, N. J.

AMERICAN TRANSIT ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York, N. Y.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 1427 Eye St., N. W., Washington, D. C. Annual meeting, 1937, New Orleans, La.

ASSOCIATION OF AMERICAN RAILROADS.—H. J. Forster, Transportation Bldg., Washington, D. C.

Operations and Maintenance Department.—J. M. Symes, Vice-President, Transportation Bldg., Washington, D. C.

Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Freight Station Section.—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York, N. Y. Annual meeting, May 11-12, 1936, Hotel Stevens, Chicago, Ill.

Protective Section.—J. C. Caviston, 30 Vesey St., New York, N. Y. Annual meeting, May 20-21, 1936, Hotel Statler, St. Louis, Mo.

Safety Section.—J. C. Caviston, 30 Vesey St., New York, N. Y. Next meeting, June 23-25, 1936, Hotel Stevens, Chicago, Ill.

Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York, N. Y. Next meeting, October 6-8, 1936, Mayflower Hotel, Washington, D. C.

Division II. — Transportation. — G. W. Covert, 59 E. Van Buren St., Chicago, Ill.

Division IV. — Engineering. — E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 10-12, 1936, Palmer House, Chicago, Ill.

Construction and Maintenance Section.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill. Annual meeting, March 10-12, 1936, Palmer House, Chicago, Ill.

Electrical Section.—E. H. Fritch, 59 E. Van Buren St., Chicago, Ill.

Signal Section.—R. H. C. Balliet, 30 Vesey St., New York, N. Y. Annual meeting, March 9-10, 1936, Hotel Stevens, Chicago, Ill.

Division V.—Mechanical.—V. R. Hawthorne, 59 E. Van Buren St., Chicago, Ill.

Division VI.—Purchases and Stores.—W. J. Farrell, 30 Vesey St., New York, N. Y.

Division VII.—Freight Claims.—Lewis Pilcher, 59 E. Van Buren St., Chicago, Ill. Annual meeting, June 2-4, 1936, Chicago, Ill.

Division VIII. — Motor Transport. — George M. Campbell, Transportation Bldg., Washington, D. C.

Car-Service Division. — C. A. Buch, Transportation Bldg., Washington, D. C.

Traffic Department.—A. F. Cleveland, Vice-President, Transportation Bldg., Washington, D. C.

Finance, Accounting, Taxation and Valuation Department.—E. H. Bunnell, Vice-President, Transportation Bldg., Washington, D. C.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—F. L. Johnson, Chief Clerk and Claim Agent, General Claims Dept., Alton R. R., 340 W. Harrison St., Chicago, Ill. Annual meeting, June 17-19, 1936, Hotel St. Paul, St. Paul, Minn.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W. Ry., 1519 Daily News Bldg., 400 W. Madison St., Chicago, Ill.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—W. S. Carlisle, National Lead Company, 900 W. 18th St., Chicago, Ill. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 2271 Wilson Ave., N. D. G., Montreal, Que. Regular meetings, second Monday of each month, except June, July and August, Windsor Hotel, Montreal, Que.

CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, M. C. B. Belt Ry. of Chicago, 7926 S. Morgan St., Chicago, Ill.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, 2514 W. 55th St., Chicago, Ill. Regular meetings, second Monday of each month, except June, July and August, La Salle Hotel, Chicago, Ill.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, Room 299, 610 S. Main St., Los Angeles, Cal. Club not active at present.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—E. G. Bishop, Illinois Central R. R., East St. Louis, Ill.

CENTRAL RAILWAY CLUB OF BUFFALO.—Mrs. M. D. Reed, 1817 Hotel Statler, McKinley Square, Buffalo, N. Y. Regular meetings, second Thursday of each month, except June, July and August, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 2920 Utopia Place, Hyde Park, Cincinnati, Ohio. Operation suspended indefinitely.

Continued on next left-hand page

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings temporarily suspended.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—T. D. Smith, 1660 Old Colony Bldg., Chicago, Ill.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash St., Winona, Minn.

MASTER BOILER MAKERS' ASSOCIATION.—A. F. Stiglmeier, 29 Parkwood St., Albany, N. Y. Annual meeting, September 16-17, 1936, Hotel Sherman, Chicago, Ill.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—Clyde S. Bailey, 810 18th St., N. W., Washington, D. C. Annual meeting, November 10-13, 1936, Atlantic City, N. J.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. H. White, Room 1826, 208 S. La Salle St., Chicago, Ill. Exhibit at A. R. E. A. Convention, March 9-12, 1936, The Coliseum, Chicago, Ill.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, second Tuesday of each month, except June, July, August and September, Copley-Plaza, Boston, Mass.

NEW YORK RAILROAD CLUB.—D. W. Pye, 30 Church St., New York, N. Y. Regular meetings, third Friday of each month, except June, July and August, 29 W. 39th St., New York, N. Y.

PACIFIC RAILWAY CLUB.—William S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings, second Thursday of each month, alternately at San Francisco, and Oakland, excepting June at Los Angeles and October at Sacramento.

RAILWAY BUSINESS ASSOCIATION.—P. H. Middleton (Treas. and Asst. Sec.), First National Bank Bldg., Chicago, Ill.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. Regular meetings, fourth Thursday of each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. McC. Price, Allen-Bradley Company, 600 W. Jackson Blvd., Chicago, Ill. Meets with Association of Railway Electrical Engineers.

RAILWAY FIRE PROTECTION ASSOCIATION.—P. A. Bissell, 40 Broad St., Boston, Mass.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1941 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division, Purchases and Stores Division, and Motor Transport Division, Association of American Railroads.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with Telegraph and Telephone Section of A. A. R., Division I.

RAILWAY TIE ASSOCIATION.—I. C. Rowe, 2091 Railway Exchange Bldg., St. Louis, Mo. Annual meeting, May 20-22, 1936, Netherland Plaza Hotel, Cincinnati, Ohio.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—Merged with Association of American Railroads.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Annual meeting, September 16-18, 1936, Chicago, Ill.

SIGNAL APPLIANCE ASSOCIATION.—G. A. Nelson Waterbury Battery Company, 30 Church St., New York, N. Y. Meets with A. A. R., Signal Section.

SOCIETY OF OFFICERS, UNITED ASSOCIATIONS OF RAILROAD VETERANS.—M. W. Jones, Baltimore & Ohio, Mt. Royal Station, Baltimore, Md. Annual meeting, October, 1936, Detroit, Mich.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, 4 Hunter St., S. E., Atlanta, Ga. Regular meetings, third Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta, Ga.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & C. R. R., Atlanta, Ga.

TOOL FOREMEN SUPPLIERS' ASSOCIATION.—E. E. Caswell, Union Twist Drill Co., 11 S. Clinton St., Chicago, Ill. Meets with American Railway Tool Foremen's Association.

TORONTO RAILWAY CLUB.—R. H. Burgess, P. O. Box 8, Terminal "A," Toronto, Ont. Regular meetings, fourth Monday of each month, except June, July and August, Royal York Hotel, Toronto, Ont.

TRACK SUPPLY ASSOCIATION.—D. J. Higgins, Gardner-Denver Company, 332 S. Michigan Ave., Chicago, Ill. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—D. Meadows (Treasurer), 58 Roseberry Place, St. Thomas, Ontario.

WESTERN RAILWAY CLUB.—C. L. Emerson, C. M. St. P. & P., Chicago, Ill. Regular meetings, third Monday of each month, except June, July, August and September, Hotel Sherman, Chicago, Ill.

Equipment and Supplies

1936 Equipment Markets Off to Auspicious Start

Orders reported during the first two months for 60 locomotives and 8,286 freight cars

Orders have been reported in January and February issues of *Railway Age* for 60 locomotives, 8,286 freight cars, 37 passenger-train cars, four Diesel-powered streamlined trains and 298,300 tons of rail. The foregoing compare respectively with orders for one locomotive, 830 freight cars, no passenger-train cars, and 127,974 tons of rail reported in corresponding issues of 1935.

Among the motive power ordered thus far this year for domestic service were 50 steam locomotives—more than were ordered during the entire year 1935 when 28 steam locomotives were purchased. The other 10 ordered this year are Diesels, thus bringing the total for all types to nearly three-fourths of the 83 of all types ordered during the entire 12 months of 1935. In addition four Diesel power units for streamlined trains have been ordered this year. Furthermore, there has been a 1936 export order for five steam locomotives and there were outstanding at the end of February inquiries for 15 steam locomotives and announced plans for the acquisition of 10 more.

The above-mentioned freight car total for the year to date—8,286—is 44 per cent of the 18,699 freight cars ordered during the entire 12 months of 1935. Also 400 freight cars have been ordered here this year for export; and inquiries were outstanding at the end of February for 1,300 cars and reports were current of plans for ordering 3,800 others.

The 37 passenger-train cars reported above as ordered in 1936 are exclusive of 32 body units, some of which will be articulated, ordered for four streamlined trains. An inquiry for 50 passenger cars was outstanding on February 29. Last year a total of 63 passenger-train cars, in addition to equipment for three motor trains, were ordered.

The 298,300 tons of rail ordered thus far this year, as shown at the outset, is more than twice the tonnage ordered in

Continued on next left-hand page

Domestic Equipment Orders Reported in Issues of Railway Age in January and February, 1936

LOCOMOTIVES

Date	Name of Company	No.	Type	Builder
Jan. 11	Chicago, Burlington & Quincy...	3	4-8-4	Company Shops
Jan. 11	Seaboard Air Line.....	1	0-4-0	Baldwin Loco. Works
Jan. 11	New York, New Haven & Hartf.	5	Diesel-electric	Cooper-Bessemer Corp.
		5	Diesel-electric	Ingersoll-Rand Co.
Jan. 25	Chicago, Burlington & Quincy..	2*	Diesel-electric	.....
Feb. 1	Chicago, Burlington & Quincy..	2*	Diesel-electric	.....
Feb. 8	Bessemer & Lake Erie.....	4	0-8-0	American Loco. Co.
		10	2-10-4	Baldwin Loco. Works
Feb. 8	Union Railroad Co.....	5	0-6-0	Lima Loco. Works
		5	0-10-2	Baldwin Loco. Works
Feb. 15	Chi., Milw., St. Paul & Pac....	1	Streamlined	American Loco. Co.
Feb. 15	Lehigh & New England.....	1	0-6-0	Baldwin Loco. Works
Feb. 22	Union Pacific	15	4-6-6-4	American Loco. Co.
Feb. 29	Norfolk & Western.....	5	Mallet	Company Shops

FREIGHT CARS

Date	Name of Company	No.	Type	Builder
Jan. 18	Bangor & Aroostook.....	50	Rack	Magor Car Corp.
Jan. 25	Chicago, Burlington & Quincy...	1,000	box	Company Shops
Feb. 8	Panama Canal	6	ballast	Haffner-Thrall
Feb. 8	Western Pacific	100	ballast	American Car & Fdry.
Feb. 8	Bessemer & Lake Erie.....	1,000	hopper	Pullman-Standard
		750	hopper	American Car & Fdry.
		250	hopper	Gen. American Car
Feb. 8	Union Railroad Co.....	600	gondola	Pressed Steel Car
		200	gondola	Greenville Steel Car
		100	gondola	Ralston Steel Car
		100	gondola	Magor Car Corp.
Feb. 15	Chicago, Milw., St. Paul & Pac..	1,000	automobile	Company Shops
		500	gondola	Company Shops
Feb. 15	Phillips Petroleum Co.....	10	tank	Gen. Amer. Tank Car Corp.
Feb. 15	Shell Chemical Co.....	15	tank	Gen. Amer. Tank Car Corp.
Feb. 15	Atchison, Topeka & Santa Fe...	50	hopper	American Car & Fdry.
Feb. 22	Northern Pacific	250	stock	Company Shops
Feb. 22	Missouri Pacific	300	box	American Car & Fdry.
Feb. 22	Atchison, Toneka & Santa Fe..	500	box	Pullman-Standard
Feb. 22	Gen. Amer. Trans. Corp. (to be leased to C.M.St.P. & P.....	250	refrigerator	Union Refrig. Transit Co.
Feb. 29	Lehigh Valley	250	composite	Company Shops
Feb. 29	California Dispatch Line.....	5	tank	American Car & Fdry.
Feb. 29	Norfolk & Western.....	1,000	coal	Company Shops

PASSENGER CARS

Date	Name of Company	No.	Type	Builder
Jan. 25	Chicago, Burlington & Quincy..	20†	.....	Edw G. Budd Mfg. Co.
Feb. 1	Chicago, Burlington & Quincy..	12†	.....	Edw G. Budd Mfg. Co.
Feb. 15	Chicago, Milw., St. Paul & Pac..	20	day coaches	Company Shops
		2	dining	
		2	taproom	
		3	parlor	
		5	baggage	
		5	mail-express	

* Power units for streamlined trains.
† Body units, some of which will be articulated, for streamlined trains.

the comparable 1935 period. Also it is 60 per cent of the 495,300 tons reported in the entire year 1935. Details of the equipment orders are shown in the accompanying table.

Frisco Program

Trustees of the St. Louis-San Francisco have asked the federal district court for permission to spend $750,387 for new rail and other track materials; $406,494 for mechanical department improvements; $298,048 for bridges, trestles and culverts; $137,991 for signals and interlockings and $104,217 for widening cuts and fills.

LOCOMOTIVES

ILLINOIS CENTRAL.—The first of three Diesel-electric locomotives has been delivered to the Illinois Central for operation in freight transfer service between Chicago and Markham Yard. It will make a round trip a day, supplanting two steam locomotives required for the same service. The first locomotive, No. 9200, built by the General Electric Company at Erie, Pa., has two 900-hp. Ingersoll-Rand oil engines. Driving motors on the two six-wheel trucks can be operated from cabs in either end of the locomotive. It is expected the locomotive will haul 62 forty-ton cars at a speed of 24 miles an hour or 125 forty-ton cars at a speed of 13 miles an hour. The locomotive is 60 ft. long, 10 ft. wide, 15½ ft. high, weighs 342,000 lb., and costs $195,000. Its maximum tractive force is estimated at 102,600 lb., dropping to 39,800 lb. at 13 miles an hour.

IRON AND STEEL

THE NEW YORK CENTRAL has taken bids on about 400 tons of steel for a building to be put up at Syracuse, N. Y.

THE LOUISVILLE & NASHVILLE has ordered 400 tons of structural steel from the Vincennes Bridge Company, Vincennes, Ind., for a bridge at Cynthiana, Ky.

THE NORFOLK & WESTERN is now inquiring for 20,000 tons of 131-lb. rail which will be used for renewal purposes. This is part of its improvement program reported in the *Railway Age* of February 29, page 372.

THE NEW YORK, CHICAGO & ST. LOUIS has ordered 6,800 tons of rails, placing 800 tons with the Bethlehem Steel Company, 4,500 tons with the Carnegie-Illinois Steel Company, and 1,500 tons with the Inland Steel Company.

THE CHESAPEAKE & OHIO has ordered 20,000 tons of rails, placing 2,000 tons with the Bethlehem Steel Company, 12,000 tons with the Carnegie-Illinois Steel Company and 6,000 tons with the Inland Steel Company.

NEW YORK CENTRAL.—A contract for about 1500 tons of steel has been let to the American Bridge Company by James Stewart & Co., who have the contract for work on the West Side Improvements of this road from Seventy-ninth street to Eighty-second street, New York City. A contract has been let for 260 tons of steel to the Phoenix Bridge Company for a bridge over the New York Central tracks at Carman, N. Y., in connection with grade crossing elimination work being carried out by Foley Brothers, Inc., contractors.

AIR CONDITIONING

THE ATCHISON, TOPEKA & SANTA FE will air condition 125 passenger cars.

MISCELLANEOUS

THE NORFOLK & WESTERN has placed an order with The Timken Roller Bearing Company, Canton, Ohio, for bearings and boxes to equip all axles, including driving axles of two class 2-6-6-4 locomotives, which the N. & W. is now building in its own shops at Roanoke, Va.

THE GRAND TRUNK WESTERN has placed another order with The Timken Roller Bearing Company, Canton, Ohio, for Timken bearings and boxes to equip the engine trucks of two of its existing passenger locomotives. The work will be done in the railroad shops at Battle Creek, Mich.

CHICAGO, BURLINGTON & QUINCY.—An order has been placed by The Edward G. Budd Manufacturing Company, Philadelphia, Pa., with The Timken Roller Bearing Company, Canton, Ohio, for bearings and boxes to equip all axles of two 10-car and two 6-car light-weight stainless steel trains which it is building for the Chicago, Burlington & Quincy.

UNION PACIFIC.—The Pullman-Standard Car Manufacturing Company, Chicago, has placed an order with The Timken Roller Bearing Company, Canton, Ohio, for bearings and boxes to equip the streamlined Diesel train, The City of San Francisco, and for the train, the City of Denver. Timken bearings have also been ordered for three extra Diesel locomotive units now being built for the Union Pacific.

Construction

BOSTON & MAINE.—An estimate of cost of $247,000, exclusive of land and property damages, covering the elimination of the Main street crossing of this road in Valley Falls, N. Y., has been approved by the New York Public Service Commission. The estimate of $247,000 includes a new river bridge and its north approach which is estimated to cost $193,600 and is to be paid for by the State Department of Public Works, as an addition other than necessary for the elimination of the crossing.

ERIE.—Plans and an estimated cost of $325,200, exclusive of land and property damages, for the elimination of the Pike street crossing of this road in Port Jervis, N. Y., have been approved by the New York Public Service Commission. The commission also authorized the Erie to do certain work in connection with the elimination at actual cost, limiting the amount to $103,700.

NEW YORK CENTRAL.—The New York Public Service Commission has approved plans, specifications and an estimate of cost of $300,000 for the construction of an express building to be built in connection with the elimination of this road's grade crossings in Syracuse, N. Y. The commission also approved an estimate of $156,000 for electric service equipment, service and distribution switchboards, battery charging system, passenger platform lighting system, wiring and appurtenances in connection with the elimination of the grade crossings in Syracuse.

NEW YORK, NEW HAVEN & HARTFORD.—Plans, specifications and an estimate of cost of $147,116, have been approved by the New York Public Service Commission for the elimination of the Carrol street and Main street crossings of this road in East Fishkill, N. Y. The commission also authorized the railroad company to do certain work in connection with the elimination at actual cost, limiting the amount to $8,950.

NORFOLK & WESTERN.—The improvement program of this company, reported in the *Railway Age* of February 29, page 372, calls for the building and extension of 10 new tracks and sidings and the construction of additional engine facilities on its Buchanan branch; extension of six of the westbound yard tracks and nine of the eastbound tracks at the Williamson (W. Va.) terminal; improvements at Roanoke, Va., yard to include extension of 20 tracks, construction of a classification and storage yard and erection of an overhead foot bridge 450 ft. long over the new facilities.

Supply Trade

The Westinghouse Electric & Manufacturing Company on April 30 will return its New York executive and sales offices from 30 Rockefeller Plaza, New York, to its former location at 150 Broadway.

The Dampney Company of America, Boston, Mass., has opened a branch office at 220 Bagley avenue, Detroit, Mich., in charge of **C. M. Boling,** who was formerly resident engineer at Cleveland, Ohio.

At a meeting of the board of trustees of **The Burden Iron Company,** of Troy, N. Y., held recently at the company's offices at 250 Park avenue, New York, **Alfred Musso,** of New York, and **Robert Kemp,** of Troy, N. Y., and **O. A. Van Denburgh,** of Troy, were installed as president, vice-president and secretary, respectively. **Arthur E. Swan,** former chief engineer of the Crucible Steel Company of America, Harrison, N. J., and **James D. Fleming,** commissioner of industrial affairs, Troy, were elected to the board of trustees along with the new president,

Continued on next left-hand page

vice-president and secretary. The business of The Burden Iron Company was founded in 1812; it is the intention of the organization to extend its field of operations by the manufacture of new lines of products.

Albert F. Huber, assistant chief engineer of the **Ramapo Ajax Corporation,** and chief engineer of its East St. Louis, Ill., plant, has been appointed chief engineer of the corporation. Mr. Huber was born in 1889 at Kansas City, Mo. He was educated in the public schools of St. Louis, then completed the academic course at St. Louis University and also took a number of extension courses in engineering and mathematical subjects at Washington University, St. Louis. He entered the employ of the Elliot Frog & Switch Company as a draftsman in 1906, and except for a short period in 1908, was in the engineering department of this company until it was consolidated in 1924 with the Ramapo Ajax Corporation. He is a member of the Engineers' Club of St. Louis and of the Standardization Committee of the Manganese Track Society. Mr. Huber will be located at the offices of Ramapo Ajax Corporation in Chicago.

Strauss Studio

Albert F. Huber

Lima Locomotive Works—Annual Report

The Lima Locomotive Works, Inc., for the year ended December 31, 1935, reported a net deficit of $538,708, after all charges, including depreciation and federal capital stock taxes. This compares with a 1934 net loss of $490,826.

The report points out that the increase in net loss as compared with the previous year was caused by lower selling prices, although sales billed during 1935 slightly exceeded those of 1934. It also points out that the amount paid in taxes has continued to increase from year to year in spite of the low volume of production, and has doubled during the past five years.

The company's current position remains unusually strong, with current assets at the close of last year totaling $4,299,416 as compared with total liabilities of only $326,313 or a ratio of about 13 to 1. Among the current assets was a total of $582,865 in cash and $759,921 in United States government securities.

At a special stockholders' meeting last November a reduction was made in the stated value of the corporation's issued stock from $50 to $30 per share. This reduction created a capital surplus of $4,221,140, against which was charged $2,687,715 to reduce the goodwill to a nominal value of $1. After this adjustment there remained a capital surplus of $1,533,425, while earned surplus at the end of the year totaled $40,444.

As in the previous report, attention is called to the "increasing obsolescence of a large percentage of existing railroad motive power and to the need for modern locomotives with capacity for greater speed and capable of more economical operation." This situation, it adds, "coupled with greater carloadings, points toward a renewal of equipment buying within a reasonable time."

OBITUARY

Thomas W. Macon, assistant to vice-president and in charge of domestic and foreign traffic of the General Railway Signal Company, with headquarters at Rochester, N. Y., died in that city at St. Mary's hospital on March 1, after an illness of several weeks. Mr. Macon was born at Blythewood, S. C., on December 1, 1882, and had been actively connected with the G-R-S Company's foreign and domestic traffic for the past 26 years. He was president of the Monroe County Railroad Employees & Taxpayers Association and was a member of a number of civic organizations, traffic and other clubs.

Thomas W. Macon

TRADE PUBLICATION

STORAGE BATTERIES IN TRAIN SERVICE.—Essential facts concerning the operation and maintenance of storage batteries are presented in an interesting and readable manner in a 36-page booklet entitled "The Modern Storage Battery in Modern Passenger Train Service," prepared by The Electric Storage Battery Company, Philadelphia, Pa. The booklet deals with current and voltage regulation, effective temperature, flushing requirements, the keeping of records, yard charging, shop practice and the ventilation of battery compartments. The Exide Ironclad battery and its action on charge and discharge are described. Data is also included on illumination, electrical units and wiring.

Financial

BESSEMER & LAKE ERIE.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority to issue $7,000,000 of equipment trust certificates.

CHICAGO & NORTH WESTERN.—*Reorganization Plan.*—The district court in Chicago has signed an order extending until June 27 the "deadline" for the filing of a reorganization plan by the Chicago & North Western. The court last year set February 27 as the deadline.

CHICAGO & NORTH WESTERN.—*Preliminary Annual Report.*—The preliminary annual report of his company for 1935 shows operating revenues of $77,345,496, as against $75,893,418 in 1934; operating expenses of $65,348,579, compared with $61,811,820; and net railway operating income of $3,578,483, compared with $5,202,105 for 1934. The net deficit in 1935 was $11,070,349 as compared with $8,276,194 in 1934.

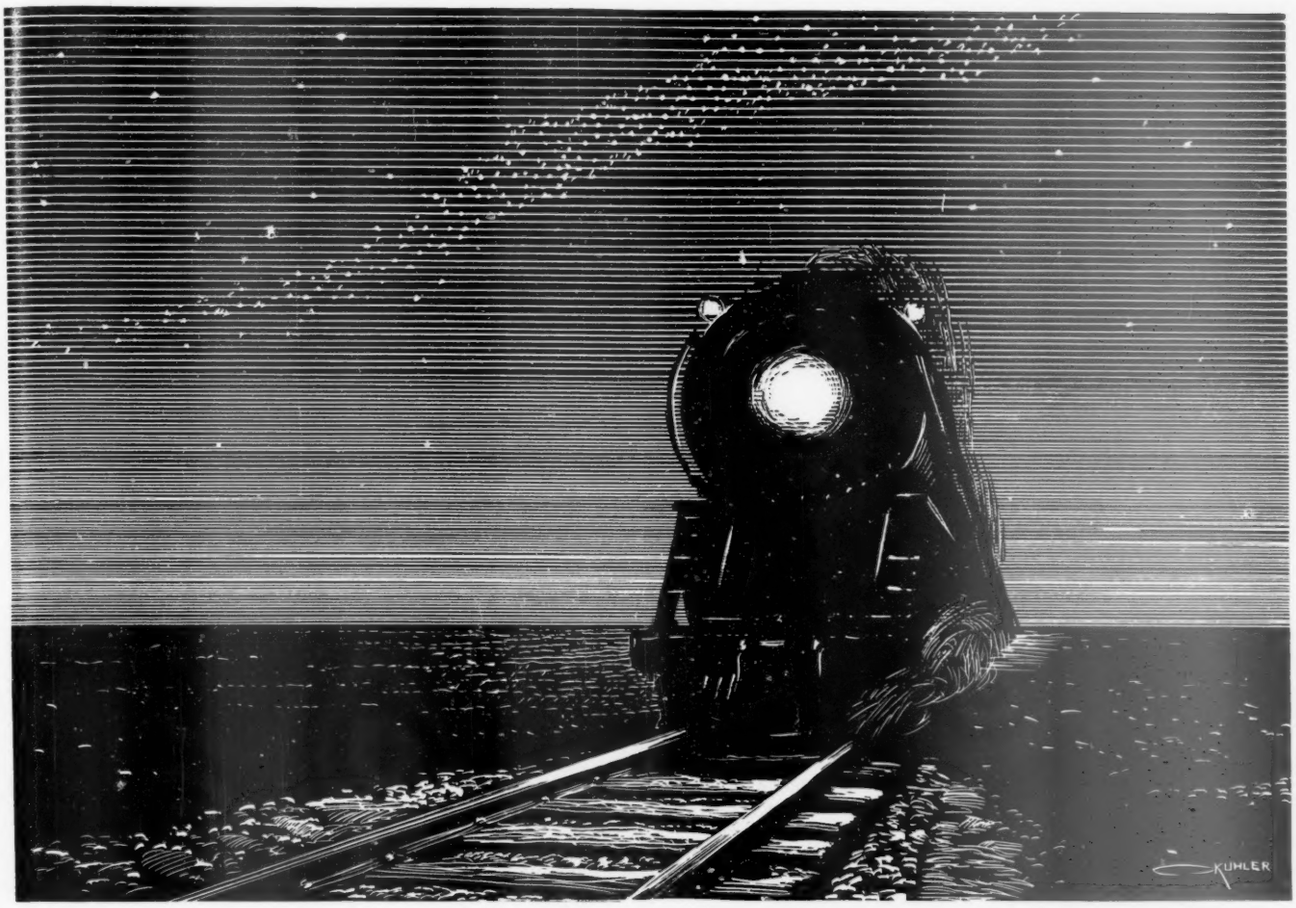
CHICAGO, BURLINGTON & QUINCY.—*Acquisition.*—The Interstate Commerce Commission has authorized this company to acquire a 2.7-mile segment of the Green Bay & Western in La Crosse, Wis.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Abandonment.*—The Interstate Commerce Commission has authorized the trustees of this company to abandon a portion of a branch line between Brampton, N. D., and Cogswell, 7.5 miles.

CHICAGO UNION STATION.—*Refinancing.*—The Chicago, Milwaukee, St. Paul & Pacific was given permission by the district court in Chicago on February 27 to join with the Chicago Union Station Company, the Pennsylvania, the Chicago, Burlington & Quincy, and the Pittsburgh, Cincinnati, Chicago & St. Louis in applying to the Interstate Commerce Commission for permission to take refunding action. The Union Station's refinancing plan provides for the issuance of $44,000,000 in new bonds bearing 3¾ per cent interest and maturing in 1963. Consummation of the refinancing will enable a saving in interest of $7,500,000 over the entire term of the bonds. The bonds to be refunded include the first gold 4½s, series A, due 1963, amounting to $30,850,000, and the first gold 5s, series B, due 1963, totaling $13,150,000. The new financing plan also contemplates issuance of $1,500,000 in guaranteed notes to cover a loan of that amount from the banks. The series E 3¾ per cent bonds are being offered by a syndicate headed by Kuhn, Loeb & Co. at 104¼ to yield 3.5 per cent.

DELAWARE, LACKAWANNA & WESTERN.—*Annual Meeting.*—At the annual meeting of stockholders of this company, held February 25, the officers and members of the board of managers were re-elected. After reviewing the record of operations for 1935 and explaining that higher expenses had been occasioned largely by flood damage, amounting to more than $1,000,000, President Davis predicted improved conditions this year, provided the

Continued on next left-hand page



TREMENDOUS SAVINGS!

"The Steam Locomotive, long past the experimental stage, has a contribution of great importance to make . . . . in the direction of tremendous savings yet to be secured in operating expenses.

I wish to cite chapter and verse: the average yearly expense for maintenance of equipment for the ten-year period of 1920-1929, was $1,290,000,000, covering an average total tractive power in locomotives of 2,500,000,000 pounds. For the five years, 1930-1934 similar average yearly maintenance was only $738,000,000, or about *60 per cent* of the former yearly figure; whereas the average tractive power for this latter period had decreased *only 4 per cent.*

The vital significance of these figures, for those familiar with railway operation, lies in two directions:

First, it is inescapable as to the extent to which maintenance has been deferred; and *Second*, and greatly more important, is the extraordinary degree of utilization possessed by the modern steam motive power which the railroads have."

From "STEAM AND THE RAILROADS"
By W. C. DICKERMAN

AMERICAN LOCOMOTIVE COMPANY

30 CHURCH STREET · NEW YORK · N·Y·

ALCO

recovery of business continues. Tax assessments in 1935 amounted to $2.72 a share, par value of which is $50. Mr. Davis considered the new federal pension law a serious problem to all railroads. The Lackawanna's voluntary pension roll totals $53,000 monthly. If the federal law, the constitutionality of which is being tested, be upheld it will entail additional expense of $60,000 monthly to the company, while employees will contribute an equal amount. Elimination of grade crossings in New York State, Mr. Davis reported, will cost $1,721,000, of which $833,000 will be P.W.A. funds, $449,000 state and county funds and $434,200 railroad expenditure. Crossing eliminations in Pennsylvania will cost $415,000, $260,000 of which will be provided by P.W.A., $92,507 by state and county and $35,000 by the railroad. Similar work in New Jersey will cost the federal government $387,601, the state and county $20,700, while the railroad will spend $10,500 upon the work.

ERIE.—*Annual Report.*—The 1935 annual report of this company shows net deficit, after interest and other charges, of $852,400, as compared with a net deficit of $601,034 in 1934. Selected items from the Income Statement follow:

	1935	1934	Increase or decrease
Average mileage operated	2,297.5	2,304.9	–7.4
RAILWAY OPERATING REVENUES	$75,126,702	$75,064,121	+$62,580
Maintenance of way	6,811,021	6,887,750	–76,729
Maintenance of equipment	14,312,478	15,172,539	–860,061
Transportation	28,182,756	26,920,467	+1,262,289
TOTAL OPERATING EXPENSES	54,793,413	54,311,372	+482,041
Operating ratio	72.93	72.35	+0.58
NET REVENUE FROM OPERATIONS	20,333,288	20,752,749	–419,461
Railway tax accruals	3,978,079	3,951,598	+26,480
Railway operating income	16,323,094	16,783,384	–460,289
Net rents—Dr.	3,362,368	4,083,552	–721,183
NET RAILWAY OPERATING INCOME	12,960,726	12,699,832	+260,894
Non-operating income	1,752,873	2,373,238	–620,364
GROSS INCOME	14,713,599	15,073,070	–359,470
Rent for leased roads	2,130,225	2,179,486	–49,261
Interest on funded debt	12,159,710	12,197,023	–37,313
NET DEFICIT	$852,400	$601,034	–$251,365

GREAT NORTHERN.—*R.F.C. Loan.*—The Interstate Commerce Commission has authorized this company to sell at par not more than $99,422,400 of its 4 per cent convertible bonds (in equal amounts of series G and H) to the Reconstruction Finance Corporation, or to borrow all or any part of this sum from the R.F.C. with these bonds as security. Chairman Jesse Jones of the R.F.C. on March 2 called attention to the fact that these bonds were being quoted on the market at above par on a "when issued" basis, from which he predicted that the R.F.C. would not have to take any of the issue. The bonds are first being offered to stockholders.

ILLINOIS CENTRAL.—*Equipment Trust.*—The Reconstruction Finance Corporation has asked for bids on an issue of $14,700,000 of 4 per cent equipment trust certificates of this company which it acquired from the Public Works Administration.

ILLINOIS TERMINAL.—*Abandonment.*—The Interstate Commerce Commission has authorized this company and the Illinois Traction to abandon the Georgetown branch of the latter company, extending from Georgetown, Ill., to a junction of the "Tilton Line" of this company at South Danville, 10.3 miles.

NEW YORK, CHICAGO & ST. LOUIS.—*Equipment Trust.*—The Interstate Commerce Commission has modified a previous order authorizing this company to issue $5,028,000 of 4 per cent equipment trust of 1934 certificates, reducing the amount to $4,809,000 and providing for their issue in definitive form without the redemption privilege. The certificates are owned by the Reconstruction Finance Corporation.

PENNSYLVANIA.—*Preliminary Report.*—The preliminary annual report of this company for 1935 shows operating revenues of $367,812,186 (an increase of $24,143,487 over 1934) and operating expenses of $297,417,545 (an increase of $17,884,133). Net railway operating income was $70,394,641, an increase of $6,259,354, and net income, $23,849,798, an increase of $2,215,833.

ST. LOUIS SOUTHWESTERN.—*Compensation of Trustees.*—The Interstate Commerce Commission has fixed the compensation of Berryman Henwood as trustee at a maximum of $15,000 per year, of A. H. Kiskaddon as general counsel to trustee at a maximum of $10,800, and of C. S. Hadley as assistant general counsel at $6,400. The trustee petitioned for compensation of $25,000, and for $12,000 for Mr. Kiskaddon.

SOUTHERN PACIFIC.—*Preliminary Report.*—The preliminary report of the Southern Pacific Lines for 1935 shows operating revenue of $163,381,512 (an increase of 9.51 per cent), operating expenses of $123,898,159 (an increase of 9.09 per cent) and net railway operating income of $20,319,880 (increase 19.5 per cent). Net income was $2,346,590 (increase 474.83 per cent).

UNION.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority to issue $2,700,000 of equipment trust certificates.

Average Prices of Stocks and of Bonds

	Mar. 3	Last week	Last year
Average price of 20 representative railway stocks..	50.03	49.55	30.19
Average price of 20 representative railway bonds..	81.48	81.57	73.28

Dividends Declared

Beech Creek —50c, quarterly, payable April 1 to holders of record March 16.

Lackawanna R. R. of New Jersey.—4 Per Cent Guaranteed, $1.00, quarterly, payable April 1 to holders of record March 5.

New York, Lackawanna & Western.—5 Per Cent Guaranteed, $1.25, payable April 1 to holders of record March 12.

Vicksburg, Shreveport & Pacific.—$2.50, semi-annually; Preferred, $2.50, semi-annually, both payable April 1 to holders of record March 9.

Railway Officers

EXECUTIVE

A. L. Smith, general manager of the Tremont & Gulf, has also been elected vice-president, with headquarters as before at Winnfield, La.

Carl L. Jellinghaus, superintendent of property protection of the New York Central, has been appointed executive secretary to the president.

FINANCIAL, LEGAL AND ACCOUNTING

William I. Woolcock, Jr., general solicitor for the Reading, with headquarters at Philadelphia, Pa., has been appointed general counsel, succeeding **William L. Kinter,** who died on December 22.

OPERATING

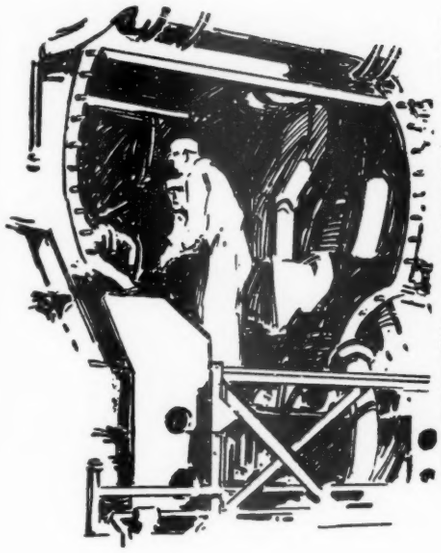
R. F. Morse has been appointed general manager of the Longview, Portland & Northern, with headquarters at Longview, Wash., succeeding **S. M. Morris.**

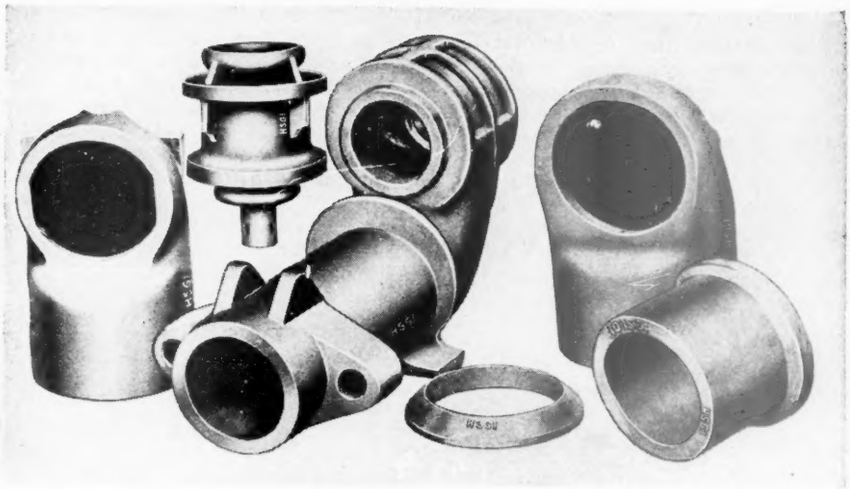
E. S. McCracken, assistant superintendent for the Canadian Pacific, with headquarters at North Bend, B. C., has been appointed superintendent of the Kootenay division.

W. Manson, superintendent on the Canadian Pacific, with headquarters at Calgary, Alta., has been transferred to the Regina division, with headquarters at Regina, Sask., succeeding **J. I. MacKay,** who has been transferred to Calgary.

W. F. Kirk, assistant general manager on the Missouri Pacific, with headquarters at St. Louis, Mo., has been appointed general superintendent of transportation, with the same headquarters, succeeding **J. L. Kendall,** who has been appointed superintendent of the Omaha-Northern Kansas divisions, with headquarters at Falls City, Neb. Mr. Kendall replaces **W. E. Lamb,** who has been appointed general superintendent of the Southern district, with headquarters at Little Rock, Ark., to replace **W. E. Brooks,** who has retired. **C. H. Wood** has been appointed assistant general superintendent of transportation, with headquarters at St. Louis. **J. S. Bassett,** assistant superintendent of the Memphis division, with headquarters at Wynne, Ark., has been appointed superintendent of the Little Rock-Louisiana divisions, with headquarters at Monroe, La., succeeding **H. E. Roll,** who has been transferred to the Arkansas division, with headquarters at Little Rock, to replace **J. Davis,** who has been appointed district engineer with the same headquarters, as noted elsewhere in these columns. **C. W. Exline,** trainmaster on the Arkansas division, with headquarters at Little Rock, has been appointed assistant superintendent of the Memphis division, to replace Mr. Bassett. **J. M. Kelly,** assistant superin-

Continued on next left-hand page





PREVENT
Expensive Renewals

HUNT-SPILLER *Air Furnace* GUN IRON Dry Pipe Fittings offer big savings in boiler maintenance costs.

Their uniformity insures freedom from defects which are basically the cause of most failures and expensive renewals.

Application of H S G I Dry Pipe Sleeves, Elbows, Stand Pipes and Throttle Boxes on your power will assure steam tight joints and save many maintenance dollars.

H S G I
Reg. U. S. Trade Mark

Cylinder Bushings
Cylinder Packing Rings
Pistons or Piston Bull Rings
Valve Bushings
Valve Packing Rings
Valve Bull Rings
Crosshead Shoes
Hub Liners
Shoes and Wedges
Floating Rod Bushings

Parts Finished For Application

Dunbar Sectional Type Packing
Duplex Sectional Type Packing for Cylinders and Valves (Duplex Springs for Above Sectional Packing)
Cylinder Snap Rings
Valve Rings All Shapes

HUNT-SPILLER MFG. CORPORATION
J. G. Platt Pres. & Gen. Mgr. / V. W. Ellet Vice-President

Office & Works
383 Dorchester Ave. South Boston, Mass.
Canadian Representative: Joseph Robb & Co., Ltd., 5575 Cote, St. Paul Rd., Montreal, P. Q.
Export Agent for Latin America:
International Rwy. Supply Co., 30 Church Street, New York, N. Y.

HUNT-SPILLER GUN IRON
Air Furnace

tendent of the Wichita division, at Wichita, Kan., has been transferred to the Joplin-White River divisions, at Nevada, Mo., and the position of assistant superintendent at Wichita has been abolished. **F. O. Garrett** has been appointed trainmaster on the Arkansas division, with headquarters at Little Rock, to replace Mr. Exline. **George W. Booker** has been appointed trainmaster of the St. Louis Terminal division, with headquarters at St. Louis, Mo., to succeed **R. B. Learmont,** retired. These changes became effective on March 1.

TRAFFIC

W. P. Mahoney has been appointed lease and live stock agent for Arizona on the Atchison, Topeka & Santa Fe, with headquarters at Phoenix, Ariz.

R. Wright Armstrong, general agent on the Chicago, Burlington & Quincy at New Orleans, La., has been promoted to general freight agent, with headquarters at Denver, Colo., succeeding **Howard C. Holzbach,** deceased. **A. R. Brown,** commercial agent at Oklahoma City, Okla., has been appointed general agent at New Orleans, to replace Mr. Armstrong.

F. E. Pennington, general agent for the Missouri Pacific at Pittsburgh, Pa., has been promoted to general freight agent with headquarters at St. Louis, Mo., succeeding **G. C. Stohlman,** who has been appointed general freight and passenger agent at Little Rock, Ark. Mr. Stohlman replaces **Norton England,** who has been appointed general agent at Pittsburgh to replace Mr. Pennington.

W. K. Tate, general agent, industrial department, of the Nashville, Chattanooga & St. Louis, has been appointed assistant to the vice-president and traffic manager, with headquarters at Nashville, Tenn., succeeding **George F. Regan,** deceased. **Earl Roach** has been appointed general agent, industrial department, with headquarters at Nashville, succeeding Mr. Tate. **F. A. Burke,** commerce agent at Nashville, has been appointed general freight agent, with the same headquarters.

William F. Griffitts, passenger traffic manager of the Delaware, Lackawanna & Western, with headquarters at New York, has requested that he be relieved of the duties of that position, and has been appointed general agent of the passenger department. **Walter H. Dominick,** general passenger agent at New York, has been promoted to passenger traffic manager. **John L. Homer,** assistant general passenger agent at New York, has been promoted to general passenger agent. **M. H. Murphy,** district passenger agent at New York, has been promoted to general eastern passenger agent and he will take over the duties performed by Mr. Homer. **W. H. Weber,** city passenger agent, has been promoted to district passenger agent.

R. E. Shineman, chief clerk to the vice-president, traffic, of the New York Central System at New York, has been appointed New England freight agent, with headquarters at Boston, Mass., succeeding **J. V. Laffan,** who has been promoted to division freight and passenger agent of the system, with headquarters at Charleston, W. Va. **W. G. Evans,** division freight and passenger agent at Charleston, has been appointed assistant general freight agent at St. Louis, Mo., succeeding **S. A. Townsend.** A photograph and biographical sketch of Mr. Townsend was published in the *Railway Age* of February 15, in connection with his appointment as assistant freight traffic manager.

William H. Johnson, special representative in the freight traffic department of the Pennsylvania at Chicago, and formerly general freight agent with the same headquarters, retired on March 1, after 54 years of service with this company. Mr. Johnson was born in Buffalo, N. Y., on February 28, 1866, and entered the service of the Pennsylvania on March 1, 1882, as an office boy at Buffalo. Subsequently he served as paymaster and cashier and in 1898 was appointed agent at Buffalo for the Anchor Line. In 1903 Mr. Johnson was transferred to Chicago and in 1906 he was made general western agent. He was appointed manager of the Union Line in 1915, and in March, 1920, he was advanced to general freight agent, with the same headquarters. Subsequently he was made a special representative in the freight traffic department at Chicago.

PURCHASES AND STORES

C. E. Swanson, storekeeper on the Chicago, Burlington & Quincy at Galesburg, Ill., has been appointed traveling storekeeper, with headquarters at Chicago, to succeed **Hal D. Foster,** whose appointment as purchasing agent of the Colorado & Southern was noted in the *Railway Age* of February 29 and a sketch and photograph of whom are presented in this issue. **E. J. Clark,** chief lumber inspector at Chicago, has been appointed storekeeper at Sheridan, Wyo., to succeed **J. A. Allen,** who has been transferred to Galesburg, Ill., to replace Mr. Swanson. **O. A. Schultz,** inspector of stores, has been appointed chief lumber inspector, with headquarters as before at Chicago, to succeed Mr. Clark. **J. K. McCann,** chief clerk at the Havelock (Neb.) store, has been appointed inspector of stores at Chicago to replace Mr. Schultz. The effective date of these changes was March 1.

Hal D. Foster, traveling storekeeper of the Burlington, with headquarters at Chicago, who has been appointed purchasing agent of the Colorado & Southern, with headquarters at Denver, Colo., as noted in the *Railway Age* of February 29, was born on October 31, 1886. He entered the service of the Burlington on July 5, 1907, as a laborer at the Hannibal (Mo.) store, serving in various capacities at this point until April, 1910, when he was made chief clerk at this store. In August of the following year, Mr. Foster was transferred to West Burlington, Iowa, and thence to Galesburg in August, 1913. In April, 1915, he was appointed general foreman, at the Havelock (Neb.) store, being transferred to Aurora, Ill., in October, 1917. In September, 1918, Mr. Foster was appointed storekeeper at Beardstown, Ill., and in June of the following year he was appointed general piece work inspector, with headquarters at Chicago. From July, 1920, to July, 1922

Hal D. Foster

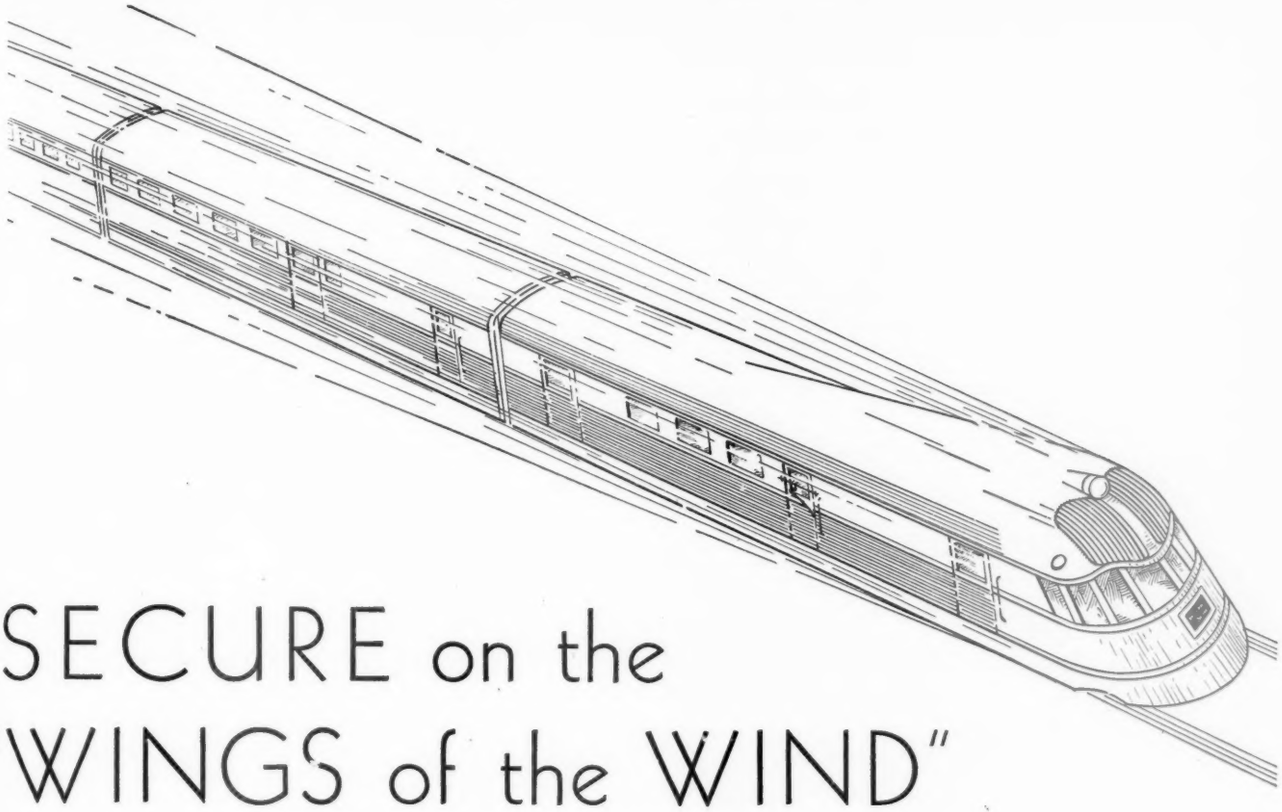
he served as storekeeper at West Burlington, then being appointed inventory inspector at Chicago. In March, 1926, he was appointed traveling storekeeper, with the same headquarters, then, in September, 1926, being assigned to the position of shop cost engineer in the office of the operating vice-president at the same point. In September, 1931, Mr. Foster was appointed inspector of stores and in January, 1936, he was appointed traveling storekeeper, which position he was holding at the time of his recent appointment as purchasing agent of the C. & S.

Warren F. Myers, local storekeeper on the Chicago, Burlington & Quincy at McCook, Neb., whose appointment as general storekeeper of the Ft. Worth & Denver City, the Wichita Valley and the Burlington-Rock Island, with headquarters at Childress, Tex., was noted in the *Railway Age* of February 8, was born on July 9,

Warren F. Myers

1896, at Burlington, Iowa. He entered the service of the Burlington on October 10, 1912, holding various clerkships in the Galesburg (Ill.) yard until December, 1915, when he was made a refrigerator inspector in the Galesburg ice house. In December, 1916, Mr. Myers was made a

Continued on next left-hand page



SECURE on the "WINGS of the WIND"

Swift and powerful as a gale, yet gentle and soothing as a breeze, is the transit of modern streamlined trains . . . Speed, comfort, and SAFETY are here coordinated to provide the acme in passenger transportation service . . . Deluxe travel on the "wings of the wind" is made secure by Air Brakes as modern as the vehicles that they control » » » »

The Westinghouse "HSC" Brake Equipment comprises three coordinated systems that maintain adequate and precise control at all times . . . A Primary System, which provides powerful and flexible braking by electro-pneumatic means . . . . A Secondary System, which produces pneumatic operations if electric functions are interrupted . . . An Emergency System by which high braking pressure is built up to effect the shortest possible stop, when initiated by any of the usual means, or by the Safety Control System . . . A Controller automatically governs brake cylinder pressure—if the operator fails to do this by normal brake valve manipulation—so that the highest permissible rate of retardation may be uniformly attained under all conditions, but never exceeded.

WESTINGHOUSE AIR BRAKE CO.

General Office and Works » » » » Wilmerding, Penna

clerk in the Galesburg yard and served in this position and as assistant yardmaster for a year, then being appointed a brakeman. During the war Mr. Myers left railway service to join the United States Army, returning to the Burlington as a refrigerator inspector at Galesburg in January, 1919. In May, 1922, he was made ice house foreman and in November of the following year he was appointed piece work inspector at the Galesburg store, where he served as stockman from June, 1925, to March, 1926. At the end of this period he was appointed chief clerk at the Galesburg store, being transferred to Havelock, Neb., in May, 1929. From January, 1933, until his recent appointment Mr. Myers served as local storekeeper at McCook.

ENGINEERING AND SIGNALING

J. Davis, superintendent of the Arkansas division of the Missouri Pacific, with headquarters at Little Rock, Ark., has been appointed district engineer of the Southern district, with the same headquarters, to fill a position that has been vacant for some time.

MECHANICAL

T. J. Clark, superintendent of motive power of the Great Northern at Spokane, Wash., has retired after 52 years of service with this company.

Frank J. Regan, road foreman of engines on the Northern Pacific, has been appointed acting master mechanic of the St. Paul division, with headquarters at St. Paul, Minn., succeeding **N. E. Entrikin,** who has been granted a leave of absence.

L. E. Allard has been appointed assistant master mechanic on the Kansas City Terminal division of the Missouri Pacific, with headquarters at Kansas City, Mo., succeeding **R. H. Tait,** retired.

Alfred G. Hoppe, engineer of tests of the Chicago, Milwaukee, St. Paul & Pacific, has been appointed assistant mechanical engineer, with headquarters as before at Milwaukee, Wis., succeeding **H. A. Sjogren,** who has been appointed assistant to the superintendent of the car department, with the same headquarters. **Harry G. Miller,** chief inspector, has been appointed engineer of tests, to succeed Mr. Hoppe. **T. M. Cannon,** a draftsman in the mechanical engineer's office at Milwaukee, has been appointed chief inspector with the same headquarters, to succeed Mr. Miller.

Joseph B. Blackburn, who has been appointed engineer of motive power of the Advisory Mechanical committee of the Van Sweringen Lines, with headquarters at Cleveland, Ohio, as noted in the *Railway Age* of February 15, was born on August 17, 1898, in Essex county, Va. After graduating from Virginia Polytechnic Institute in 1921 with a degree in mechanical engineering, Mr. Blackburn taught mechanical drawing in Norfolk, Va., for about three years. He entered railway service on May 1, 1924, as a draftsman in the mechanical department of the Chesapeake & Ohio at Richmond, Va., being appointed special mechanical inspector on February 1, 1929. After only a month in the latter position, Mr. Blackburn was appointed chief draftsman and a year later he was further advanced to mechanical engineer. On January 1, 1932, he was reappointed draftsman at Richmond and on August 1, 1933, he was appointed mechanical inspector. In March, 1934, Mr. Blackburn was appointed mechanical inspector on the Advisory Mechanical committee of the Van Sweringen Lines, and on December 1, 1934, he was appointed to the position of equipment inspector on the staff of the mechanical vice-president of these lines, with headquarters at Huntington, W. Va., which position he was holding at the time of his recent appointment.

SPECIAL

H. A. Hansen, superintendent of the Utah Parks Company, a subsidiary of the Union Pacific, at Cedar City, Utah, has been appointed assistant to the manager of the dining car and hotel department of the Union Pacific, with headquarters at Omaha.

OBITUARY

Clark B. Davison, who retired on June 20, 1930, as general supervisor of communications and telegrapher personnel of the Chicago, St. Paul, Minneapolis & Omaha, died on February 23.

George F. Regan, assistant to the vice-president and traffic manager of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., died on February 26 after more than 30 years' service with this company.

John H. Minette, superintendent of the Boston & Albany shops at West Springfield, Mass., died on February 29. Mr. Minette was born March 3, 1872, at Danbury, Vt. He entered the service of the Boston & Albany as a machinist at West Springfield in 1904. In 1914 he was appointed shop draftsman and a year later made valuation engineer. Upon completion of the valuation work he returned to the West Springfield shops, advancing to the position of general foreman in 1927 and to superintendent of shops, January 1, 1929.

John W. Higgins, executive secretary of the Association of Western Railways and chairman of the General Managers' Association of Chicago, died on March 1 at his home in Chicago. Born on October 12, 1864, at Newport, R. I., Mr. Higgins first entered railway service in 1879 as a joint messenger and United States mail transfer clerk with the Toledo, Peoria & Western and the Illinois Central at Gilman, Ill., continuing with the Illinois Central successively as a trackman, switchman, telegraph operator, brakeman and freight train conductor. In 1889 he was appointed chief clerk to superintendent, then serving successively as a trainmaster, chief clerk to the general superintendent, assistant superintendent and superintendent of various divisions. In 1899 he was advanced to superintendent of transportation of the system, being appointed general superintendent of transportation in 1901. Two years later Mr. Higgins went with the Grand Trunk (now part of the Canadian National), where he served as assistant superintendent on various divisions in Canada. In 1904 he left this company to go with the Missouri Pacific as general inspector of transportation, then being appointed assistant general manager later in the same year and general manager in 1910. In 1915, Mr. Higgins was appointed executive secretary of the Association of Western Railways and chairman of the General Managers' Association, Chicago, holding these positions continuously until his death. However, during the intervening period, Mr. Higgins was connected in an executive capacity with several other railroad organizations and served as a member and chairman of various conferences and arbitration boards dealing with questions of railway wages and employment conditions.

Frank L. Burckhalter, vice-president of the Southern Pacific, with headquarters at San Francisco, Cal., died in that city on March 3 of heart disease. Mr. Burckhalter was born at Truckee, Cal., in 1879, and was graduated from the University of California in 1900. Shortly thereafter he entered railway service as a rodman in the engineering department of the Southern Pacific and later served until February, 1902, as a levelman and computor on location survey parties, then being appointed successively assistant engineer, construction foreman and roadmaster. From

Frank L. Burckhalter

March, 1906, to November, 1911, he served as division engineer at Bakersfield, Cal., and at Los Angeles, then being promtoed to district engineer at Portland, Ore. On March 1, 1914, Mr. Burckhalter was transferred to the operating department as superintendent of the Portland division, with headquarters at Portland, Ore. He was promoted to assistant general manager, with headquarters at San Francisco, on September 1, 1918, being further promoted to first assistant general manager with the same headquarters, on June 1, 1925. On January 1, 1929, Mr. Burckhalter was advanced to general manager of the Pacific Lines of the Southern Pacific, which position he held until his election as vice-president in March, 1933.

THIRTY-EIGHTH ANNUAL REPORT OF READING COMPANY
FOR THE YEAR ENDED DECEMBER 31, 1935

PHILADELPHIA, PA., FEBRUARY 27, 1936.

To the Stockholders of Reading Company:

The Board of Directors submits herewith its 38th Annual Report.

INCOME ACCOUNT
For Years Ended December 31, 1935 and 1934

	1935	1934
RAILWAY OPERATING REVENUES:		
Freight:		
Coal	$24,315,364.83	$27,542,428.15
Merchandise	21,369,143.05	19,902,031.19
Passenger	3,077,347.19	2,958,625.84
Excess baggage	1,897.52	2,036.72
Parlor and chair car	5,148.81	4,755.27
Mail	375,671.45	412,998.97
Express	418,560.00	415,359.18
Other passenger train	105,252.70	102,267.99
Milk	36,489.20	40,162.48
Switching	247,434.53	243,638.07
Special service train	3,439.50	3,357.50
All other transportation	268,686.64	347,440.86
Incidental and joint facility	1,149,297.55	1,103,329.04
TOTAL RAILWAY OPERATING REVENUES	$51,373,732.97	$53,078,431.26
RAILWAY OPERATING EXPENSES:		
Maintenance of way and structures	$3,935,088.97	$3,844,950.08
Maintenance of equipment	8,550,741.94	9,548,328.76
Traffic	905,823.86	858,038.13
Transportation	20,037,574.89	19,752,805.80
Miscellaneous operations	226,458.91	215,564.83
*General expenses	2,107,618.66	2,669,800.28
Transportation for investment—Cr.	*11,162.52*	*4,333.57*
TOTAL RAILWAY OPERATING EXPENSES	$35,752,144.71	$36,885,154.31
Ratio of operating expenses to operating revenues	69.59	69.49
Net revenue from Railway Operations	$15,621,588.26	$16,193,276.95
Railway tax accruals	3,586,475.46	3,603,345.74
Uncollectible railway revenues	13,825.31	8,475.88
RAILWAY OPERATING INCOME	$12,021,287.49	$12,581,455.33
OTHER OPERATING INCOME:		
Hire of freight cars—Net	$296,307.16	$17,261.15
Other equipment rents—Net	158,313.73	149,284.42
Joint facility rents—Net	86,451.23	108,972.03
TOTAL OTHER OPERATING INCOME	$541,072.12	$275,517.60
NET RAILWAY OPERATING INCOME	$12,562,359.61	$12,856,972.93
NONOPERATING INCOME:		
Miscellaneous rent income	$649,872.17	$599,596.52
Miscellaneous nonoperating physical property	233,028.82	223,626.73
Separately operated properties—Profit	18,651.20	5,089.51
Dividend income	609,999.97	386,599.51
Income from funded securities	843,984.35	958,291.05
Income from unfunded securities and accounts	144,214.68	145,021.29
Income from sinking and other reserve funds	28,077.50	28,077.50
Miscellaneous income	12,297.63	14,000.42
TOTAL NONOPERATING INCOME	$2,540,126.32	$2,360,302.53
GROSS INCOME	$15,102,485.93	$15,217,275.46
DEDUCTIONS FROM GROSS INCOME:		
Rent for leased roads	$3,259,767.59	$3,259,161.00
Miscellaneous rents	137,643.02	137,983.74
Miscellaneous tax accruals	176,166.99	209,447.68
Interest on funded debt	5,446,353.68	5,502,708.85
Interest on unfunded debt	269.77	61,310.34
Amortization of discount on funded debt	7,542.53	7,730.44
Miscellaneous income charges	360,569.20	356,879.91
TOTAL DEDUCTIONS FROM GROSS INCOME	$9,388,312.78	$9,535,221.96
NET INCOME	$5,714,173.15	$5,682,053.50
DISPOSITION OF NET INCOME:		
Income applied to sinking and other reserve funds	$44,520.00	$44,520.00
INCOME BALANCE TRANSFERRED TO PROFIT AND LOSS	$5,669,653.15	$5,637,533.50

* There was included in General Expenses for the year 1934 $379,058 set aside under the Federal Retirement Act. This Act was declared unconstitutional by the United States Supreme Court on May 6, 1935, and the amount accrued in 1934 was cancelled and adjusted in 1935.

Italics denote credits.

GENERAL BALANCE SHEET, DECEMBER 31, 1935

ASSETS

INVESTMENTS:		
Investment in road and equipment		$312,677,867.34
Improvements on leased railway property		47,956,572.65
Deposits in lieu of mortgaged property sold:		
Cash	$1,941.20	
Securities $2,465,407.00		
Less company's securities ... 1,688,600.00	776,807.00	778,748.20
Miscellaneous physical property		12,511,058.15
		$373,924,246.34
INVESTMENTS IN AFFILIATED COMPANIES:		
Stocks		$45,996,062.62
Bonds		12,259,829.56
Advances		12,258,026.47
		$70,513,918.65
OTHER INVESTMENTS:		
Stocks		$5,335,159.02
Bonds		4,503,453.60
Advances		491,188.85
Miscellaneous		425,960.86
		$10,755,762.33
Total Investments		$455,193,927.32
CURRENT ASSETS:		
Cash		$3,711,849.39
Special deposits		35,087.10
Loans and bills receivable		60,712.35
Traffic and car-service balances receivable		1,020,120.66
Net balance receivable from agents and conductors		894,633.22
Miscellaneous accounts receivable		1,622,971.85
Material and supplies		5,098,546.68
Interest and dividends receivable		298,279.73
Other current assets		244.88
Total Current Assets		$12,742,445.86
DEFERRED ASSETS:		
Working fund advances		$39,212.00
Insurance and other funds $1,049,900.73		
Less company's securities 411,000.00		638,900.73
Other deferred assets		333,154.00
Total Deferred Assets		$1,011,266.73
UNADJUSTED DEBITS:		
Rents and insurance premiums paid in advance		$25,170.02
Discount on funded debt		378,260.48
Other unadjusted debits		445,117.53
Total Unadjusted Debits		$848,548.03
Securities issued or assumed—unpledged .. $4,655,283.33		
Securities issued or assumed—pledged 1,476,000.00		
Grand Total		$469,796,187.94

LIABILITIES

	Book Liability	Held by or for Company	
STOCK:			
First preferred	$28,000,000.00	$8,800.00	$27,991,200.00
Second preferred	42,000,000.00	29,350.00	41,970,650.00
Common	70,000,000.00	10,900.00	69,989,100.00
Total Stock	$140,000,000.00	$49,050.00	$139,950,950.00
LONG-TERM DEBT:			
Funded debt secured by mortgage	$112,203,250.77	$6,544,833.33	$105,658,417.44
Funded debt secured by stock collateral	24,295,000.00	1,637,000.00	22,658,000.00
Equipment trust obligations	5,023,000.00		5,023,000.00
Total Funded Debt Unmatured	$141,521,250.77	$8,181,833.33	$133,339,417.44
Non-negotiable debt to affiliated companies			320,040.50
Total Long-Term Debt			$133,659,457.94
Grants in aid of construction			$1,575,235.15
CURRENT LIABILITIES:			
Traffic and car-service balances payable			$1,384,546.74
Audited accounts and wages payable			2,925,471.51
Miscellaneous accounts payable			129,448.46
Interest matured unpaid			1,736,763.25
Dividends matured unpaid			9,344.44
Unmatured dividends declared			1,119,597.50
Unmatured interest accrued			505,237.01
Unmatured rents accrued			330,141.27
Other current liabilities			62,170.67
Total Current Liabilities			$8,202,720.85
DEFERRED LIABILITIES:			
Other deferred liabilities			$235,882.74
UNADJUSTED CREDITS:			
Tax liability			$2,701,374.01
Insurance and casualty reserves			1,049,900.73
Accrued depreciation—Road			11,438,339.69
Accrued depreciation—Equipment			65,765,034.30
Other unadjusted credits			287,495.90
Total Unadjusted Credits			$81,242,144.63
CORPORATE SURPLUS:			
Additions to property through income and surplus			$101,598,697.43
Funded debt retired through income and surplus			1,738,000.00
Total Appropriated Surplus			$103,336,697.43
Profit and loss credit balance			$1,593,099.20
Total Corporate Surplus			$104,929,796.63
Grand Total			$469,796,187.94

EDWARD W. SCHEER, President.